THE CHEMIST AND DRUGGIST.

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THE RIGHT OF CHEMISTS AND DRUGGISTS TO PRESCRIBE.

OUR attention has been directed, in connection with this subject, to Messrs. Glover & Davidson's edition of the New Medical Act. We cordially recommend this handbook, for it is really such, to the patronage of our readers on many points connected with the statute; but, with respect to the question under consideration, there appears some discrepancy in the opinions to be gathered from this work, inasmuch as while at page 8 an opinion decidedly in favour of counter-practice is expressed, another as decidedly adverse is given at page 52.

We have already stated that a similar clause to that in the Apothecaries' Act, exempting the trade or business of a chemist and druggist from the statutory penalties, forms part of the New Medical Act. We are inclined to concede in the first instance, that no chemist (we use this term for "chemist and druggist") has any right to "prescribe," in the strict Latin sense of the term, namely, "to write out" a recipe for medicaments to be made up by himself or another; but, with respect to what is known as counter-practice, several questions arise of great importance to the trade. These, so far as have been suggested by our correspondents, may be resolved into the four following, which, according to our promise in our last impression, we have caused to be submitted, through a solicitor, to counsel, whose opinion will be found following the queries.

1. Has a chemist, &c., a right to mix up at his shop, for a patient, a medicine which the chemist considers fit and proper for the case?

2. May he, if sent for, attend a patient for that purpose?

3. In either case, is he entitled to recover the value of his medicines if he supply the same on credit?

4. Is there any criminal liability attaching to a chemist, &c., who in dispensing medicine to a casual customer, commits an error through ignorance of the patient's constitution; if the disorder, which the regular medical attendant of the patient might have alleviated, prove fatal through the want of knowledge on the part of the chemist of previous symptoms of the particular case?

The following opinion has been received on these points:—

OPINION.

"1. I am of opinion that a chemist may, in his shop, so far prescribe for a customer as to advise with him as to the nature and quality and mode of application of the medicines which he is about to sell, and also as to which of his commodities will best suit the requirements of his customer. He may listen to

his customer's statements as to the reasons for his wishing to become a purchaser, and may suggest to and advise him as to which of his commodities will be most suitable and beneficial to the customer, or may dissuade him from purchasing or taking that which a customer in his ignorance may have applied for. This advice is merely incidental to the sale and dispensation of the chemist's wares and drugs, and cannot, of course, be made the subject of *a charge*.

"2. I should say that in no case can a chemist *attend upon a patient* or customer at the house of the latter, for the purpose of giving him advice or of *seeing him*, so as to be able to form an opinion as to the mode in which the chemist should prescribe for or supply his patient with medicines. Of course, a chemist may go to his customer's house to take an order for specific goods from the customer, if the latter send for him, he being too unwell to go out, just any other tradesman may do.

"3. In either case a chemist may, of course, recover for goods sold by him on credit; he is no more compelled to deal for ready money only than is any other tradesman. But, in all cases, the chemist must be simply a "*vendor of his goods*," in no way seeking to make a *profit* by the *advice or recommendation given by him*. It seems to me, upon the whole, that the system which is called "counter practice" is perfectly legal.

"4 I am of opinion, that a chemist who does no more than what I have suggested he may legally do, is no more liable to criminal proceedings than is any other practitioner. He makes no professions, does not hold himself out in a false position, and if he acts bonâ fide with ordinary skill and ability, not being guilty of gross negligence, he stands in about the same position as any other medical practitioner. I have not thought it necessary to cite any authorities; but I believe the history of all the professions, and all the cases on the subject, are collected and referred to in "The Attorney-General *v.* The Royal College of Physicians," 30 Law J., Chanc. 757.

"TOMPSON CHITTY.

"2, Essex-court, Temple,
"Nov. 12th, 1861."

SOMEBODY'S CARELESSNESS.

Our attention has been called to something in a recent number of the *Lancet*, which reveals the gross carelessness of the editor of that journal. We attribute the publication of what we allude to to carelessness, as we should be sorry to accuse any gentleman connected with the scientific press of downright dishonesty. Many of our correspondents, however, seem disposed to take the worst possible view of the case, and have urged us to expose the shocking want of principle which is ever displayed by our medical contemporary when dealing with questions concerning chemists and druggists. The particular instance of carelessness to which we refer, is furnished by the writer of an article, headed "Carelessness of Druggists," for, on reading the article, and referring to the Medical Directory, we find that it gives the particulars of a case of accidental poisoning occurring through the negligence of the qualified assistant of a registered surgeon. The following is the account of the case, as given in the columns of our contemporary:—

"A child, eighteen months old, daughter of Richard Osborne, a miner, of Canon's Town, Ludgvan, had been ill a week from scarlatina, and, apparently growing worse, the father went to Hayle for medical advice. Mr. James Mudge, of Hayle, was not at home; Mr. Wolf, his assistant, was. Mr. Wolf rode off to see the child, the father awaiting his return. The assistant, who is duly qualified, aged twenty-two, on his return, made up a bottle of mixture for the child. It happened

that a Miss Thomas, of Canon's Town, a distant relative of Osborne's, was suffering from a sprained shoulder, and Osborne was made the carrier for a further supply of her lotion. Mr. Wolf wrote two labels; one was, 'To be taken, two teaspoonfuls four times a-day—for Richard Osborne's child;' the other was, 'Liniment to be rubbed on the shoulder,—Miss Thomas, Canon's Town.' The label of the medicine was placed on the liniment bottle. Osborne cannot read, but when he got to Canon's Town he selected the medicine his child ought to have taken, by its colour, and gave the other to Miss Thomas. She said, 'Why, this is for your child,' and he again changed the bottles, and took home the one labelled for him. The mother gave the child the medicine, according to the directions, about one P.M., and placed it in the cradle. At three she took up the child, seeing an alteration in its countenance. In the afternoon, Osborne's sister went to the house of her relative, Miss Thomas, who remarked that she had rubbed her shoulder, but with little or no effect. Osborne's sister asked to look at the supposed liniment. She is a farrier's daughter, and at once said, 'You have the wrong medicine.' That was true; the child, with scarlatina and ulcerated throat, had taken liniment, the sprain had been uselessly treated with the scarlatina mixture. A portion of the contents of each bottle was taken to Mr. Mudge, who at once detected the error. At midnight the child died."

In commenting upon this case, the writer says nothing about druggists, but leaves the medical readers to suppose, from the heading to the article, that the mistake in labelling the bottles occurred in a druggist's shop, and not in the surgery of a qualified practitioner. To make the case stronger against the imaginary druggist, he omits to mention that the jury attributed the child's death to the scarlatina, and returned the verdict, "Died from natural causes." The writer, however, thinks it a good occasion for puffing the maker of certain angular narrow-necked bottles, the use of which would have prevented the mistake. The article is a short one, but it is given a place in the leading columns. Those who read it carefully will, however, see that it relates to the Carelessness of Doctors and not of Druggists.

THE NEW BRITISH PHARMACOPŒIA.*

Satisfactory intelligence is abroad as to the progress of that important work, "The New British Pharmacopœia." It is "expected to be published" ere the close of this year. We hope that the expectation will be fulfilled. It is promised that it shall embody every improvement of the latest and highest medical science; and, of course, no less will be looked for in a work which has so long been in hand by the most accomplished physicians and teachers of Materia Medica in the three kingdoms. The old arrangement will be pretty closely adhered to. The new Pharmacopœia will be divided into two Parts, with an Appendix. The First Part is to contain a list of the Materia Medica, in which all the substances employed in medicine will be inserted; and appended to each will be its definition, its origin, form, tests of its purity, and uses. The Second Part will contain the various groups of Galenicals, as extracts, infusions, tinctures, ointments, &c., with the mode of preparing each; likewise the processes for making the various chemicals described in the First Part. The Appendix will include the substances used, never alone as remedies, but only in their preparations; and also the various test-solutions for ascertaining the strength and purity of drugs. The long time taken by the Pharmacopœia Committee of the Medical Council in the preparation of the work is excused by the fact that everything their book describes they have made and tested—in many cases repeatedly. The introduction of a "British Pharmacopœia" throughout the United Kingdom, and the supercession of the separate codes of England, Ireland, and Scotland, will be one of the most practically useful works of the Medical Council.

* Extract from the *Lancet*.

THE NATURAL ORDERS OF PLANTS.

Umbelliferæ, or Apiaceæ.—The Umbelliferous Order.

The plants of this order bear so general a relation to each other, even in the eye of a non-botanical observer, as to be popularly known in the country under the general term "Hemlock," which is indiscriminately applied to them. They consist of herbs, or small shrubs, which are often milky, and are chiefly natives of the northern parts of Europe, Asia, and America; many occur in the southern hemisphere, but they are rare in tropical countries, except in mountainous districts. They inhabit thickets, groves, plains, waste places, and marshes. Although hardly known in India, they abound in the mountains of the Himalaya. The order belongs to the class Exogens; Sub-class Calycifloræ; and contains about two hundred and eighty-eight genera, and one thousand five hundred and fifty species.

Botanical Characters.—The stems are solid, or fistular, and furrowed. The leaves are alternate, generally much divided and compound, but sometimes simple, sheathing at the base, and destitute of stipules (little leafy appendages at the base of the leaf). The flowers are white, pink, yellow, or blue, arranged in umbels, and generally surrounded by an involucre. The calyx (outer floral covering) is superior, either entire, five-toothed, or obsolete. The corolla (inner floral covering) consists of five petals, which are inserted upon the calyx outside the disk which crowns the ovary. They are usually inflexed at the point, and imbricate, rarely valvate, in æstivation (that is, when folded in the flower bud, the petals either overlap one another like the tiles of a house, or are united by their margins only). The stamens (male organs), are five in number, alternate with the petals, and incurved in æstivation. The pistil (female organ), has an inferior, two-celled ovary, crowned with a fleshy epigynous disk, and a solitary pendulous ovule in each cell. The styles (the part which connects the stigma and ovary), two. The stigmas (the part of the female organ that receives the pollen), simple. The fruit, which is styled a Cremocarpium, or Diachenium, (from *κρεμαω*, I suspend, and *καρπος*, fruit), consists of two carpels, termed Mericarps, (from *μερις*, a part, and *καρπος*, fruit), which are separable from a common axis, called the Carpophore (from *καρπος*, fruit, and *φορέω*, I bear), to which they adhere by their faces, termed the Commissure. The back of each carpel is traversed by ridges, of which there are five primary, and sometimes four others alternating with them, and termed Secondary; the ridges are separated by channels in which, within the pericarp, are sometimes linear oily receptacles, termed Vittæ. Seeds pendulous, one in each mericarp. Embryo minute at the base of abundant horny albumen; radicle pointing towards the hilum.

Diagnosis.—Professor Bentley thus describes them: "Herbs or shrubs. Leaves alternate, usually compound, and sheathing at the base, or sometimes simple, extipulate. Flowers almost always arranged in a more or less umbellate manner. Calyx superior. Petals and stamens five, inserted on the outside of a double fleshy disk, which crowns the ovary. Ovary inferior, two-celled, with a solitary pendulous ovule in each cell. Styles two. Fruit consisting of two indehiscent carpels, which separate when ripe from a common axis or carpophore. Seeds pendulous, one in each carpel, with a minute embryo at the base of abundant horny albumen."

Distinction from other Orders.—It may generally be distinguished by the peculiar structure of its fruit.

The order has been divided into three sub-orders from the appearance of the albumen, but they are by no means well defined.

Sub-Order 1. *Orthospermeæ*, (from *ορθος*, straight, and *σπερμα*, a seed). Albumen flat on its face. Exs. Bolax, Cicuta, Cuminum, Daucus, Fœniculum, Galbanum, Heracleum, Horsfieldia, Hydrocotyle, Levisticum, Opoponax, Œnanthe, Pachypleurum, Petroselinum, Sanicula, Thapsia.

Sub-Order 2. *Campylospermeæ*, (from *καμπύλος*, inflated, and *σπερμα*, a seed). Albumen rolled inwards at the edges, and presenting a vertical furrow on its face. Exs. Anthriscus, Chærophyllum, Conium, Margotia, Opoidia, Prangos, Torilis.

Sub-Order 3. *Cœlospermeæ*, (from *κοῖλος*, concave, and *σπερμα*, a seed). Albumen with the base and apex turned inwards on its face. Exs. Atrema, Coriandrum, Ormosciadium.

General Properties.—The plants of this large order vary considerably in the nature of

their different secretions. Some abound in a watery narcotico-acrid juice, which renders them more or less poisonous; this property, however, appears to be greatly influenced by the nature of the soil and climate where they grow, as, according to Dr. Christison, species which are generally regarded as poisonous are quite harmless when obtained from some localities near Edinburgh; others are characterized by the presence of a gum, resinous, milky juice, which renders them anti-spasmodic and stimulant. A third group abound in aromatic volatile oil, which renders them aromatic and carminative, and in some cases stimulant and tonic. And a fourth furnishes us with dietetic articles.

Principal Plants and Uses.

1. Poisonous Umbelliferæ.

Æthusa.—The species *Cynapium*, Fools Parsley; is a common indigenous plant, which has sometimes been mistaken for parsley, hence its vernacular name; it causes, when taken internally, nausea, vomiting, headache, giddiness, drowsiness, spasmodic pain, numbness, &c. It is sometimes mistaken for hemlock; the mode of distinguishing from which will be found in an article on Conium, in our Botanical Calendar for June.*

Anthriscus.—The species *Vulgaris*, and *Sylvestris*, are said to possess similar qualities to Conium, but are less dangerous. The species Vulgaris is sometimes mistaken for it; the method of distinguishing it will be found in our article on Conium, in Botanical Calendar for June.†

Cicuta.—The species *Maculata*, a native of America, has very poisonous roots; it is reported that a drachm and a half of them caused the death of a boy in an hour and a half, and frequent accidents have been recorded as caused by mistaking this plant for other Umbelliferæ. It is said to have been used as a substitute for Conium with similar effects, but is more energetic. The species *Virosa*, Water Hemlock, or Cowbane, is an indigenous plant, possessing highly poisonous properties, and resembling hydrocyanic acid in the effects produced. It is said to cause true tetanic convulsions in frequent paroxysms, terminating in the death of the sufferer on the third day. Haller considered it to be the Conium of the Greeks. It is said to be poisonous to cattle.

Conium.—An article on the species *Maculatum* will be found in our Botanical Calendar for June.‡

Œnanthe.—The species *Crocata*, Hemlock, Dropwort, or Dead-tongue, and *Phellandrium*, Five-leaved Water Dropwort, are probably two of the most dangerous plants contained in the order. Fatal consequences have frequently occurred to poor people who have mistaken their roots for that of the parsnip.

2. Umbelliferæ yielding Fœtid Gum Resins.

Doremа.—The drug known as Ammoniacum is the hardened juice of the species *Ammoniacum*. The flow of this juice is, to some extent, spontaneous, but is chiefly due to the punctures of innumerable beetles when the plant has attained perfection.

Ferula.—The drug known as Sagapenum, the origin of which has not yet been determined with any accuracy, is thought to be the produce of the species *Persica*, or *Szowitsiana*. The species *Persica* is considered by some to be the probable source of a portion of the Assafœtida. According to Lindley, "Secretions, similar to Sagapenum, are produced by Bolax glebaria, a curious bee-hive shaped plant, in Southern Chile; Pucedanum montanum, whose root abounds in a white, bitter, fetid juice, employed in Courland against epilepsy; Heracleum gummiferum, Bubon galbanum, Laserpitium glabrum, whose root is violently purgative, and even caustic; Daucus gummifer, which furnished the Sicilian Bdellium of the old Pharmacopœias, &c., &c." The species *Orientalis* is said to yield a kind of ammoniacum in the kingdom of Morocco.

Galbanum.—According to Don, the species *Officinale*, a native of Syria, yields the gum resin of commerce, but its true source is still uncertain.

Narthex.—The species *Assafœtida* (Ferula assafœtida) yields the greater part of gum resin known under that name; it is obtained from the roots by incision. Its peculiar odour has been attributed to the presence of sulphur in combination with a volatile oil. In

* Vol. I. p. 214. † Vol. I. p. 214. ‡ Vol. I. p. 214.

all probability other species of the genus Ferula, and also other plants yield the drug; Royle suggests that Prangos pabularia may be one of the sources. It possesses antispasmodic and more or less stimulating properties, and is extensively used in Persia and the adjacent countries as a condiment, in the same way as garlic and other allied plants are employed in Europe.

Opoponax.—The species *Chironium*, a plant resembling the Parsnip, and a native of the Levant, is the source of the gum resin known as Opoponax. It appears to be the concrete juice of the root, obtained by incision.

Thapsia.—Lindley is of opinion that the Asadulcis, or Laser Cyreniacum, a drug which was held in high reputation among the ancients for its medicinal uses, was produced by the species *Garganica*. It had miraculous virtues assigned to it; to cure venomous wounds, to restore sight to the blind, and youth to the aged, were only a part of its reputed properties; it was also reckoned antispasmodic, deobstruent, diuretic, &c. So great was its reputation, that the princes of Cyrene caused it to be struck on the reverse of their coins, and the Cyrenian doctors were reckoned among the most eminent in the world. Its value was estimated by its weight in gold. The plants appear to be really very active purgatives.

Aromatic, Carminative, Stimulant, and Tonic Umbelliferæ.

Anethum.—The fruits of the species *Graveolens* are chiefly employed as a carminative. An essential oil is procured from them by distillation.

Archangelica.—An article on the species *Officinalis* will be found in our Botanical Calendar for August,* to which we refer our readers.

Cuminum.—The fruit of the species *Cyminum* is one of the Umbelliferous aromatics that have been known from the most remote periods of medicine. It is little employed medicinally at the present time, being chiefly used in veterinary practice.

Eryngium.—The species *Campestre* and *Maritimum*, Eryngo, have sweet aromatic roots, possessing tonic properties. A short notice of Eryngo will be found in our Botanical Calendar for January and February.†

Hydrocotyle.—The species *Asiatica* is said to be employed in India with much benefit, externally and internally, in leprosy, secondary syphilis, &c.

Carum.—The fruits of the species *Carui*, commonly termed seeds, yield, by distillation, a volatile oil, which possesses stimulant and carminative properties. They are largely used in confectionery in this country, and are employed on the continent for seasoning bread, cheese, and other articles of food.

Coriandrum.—The fruit of the species *Sativum* Coriander is largely employed by the confectioners, and is used medicinally, in conjunction with senna, to correct the nauseating and griping tendencies of that drug. In the green state, the fruit is said to possess a very disagreeable odour, resembling that of bugs, hence its name from κορις, a bug.

Levisticum.—The fruits of the species *Officinale*, Lovage, are aromatic and carminative.

Pimpinella.—The species *Anisum* is the Anise, the fruit of which is extensively used abroad for flavouring confections and liqueurs. Its chief application in British practice is as a carminative.

Ptychotis.—The Ajwains, or Ajowains of India are stated to be the produce of some species of this genus.

Sumbul, or Persian musk root, is supposed to be the produce of some plant of this order. It has a strong musky odour, and possesses antispasmodic and stimulant properties. It is imported into this country from Bombay and Russia.

Esculent Umbelliferæ.

Anesorhiza.—The species *Capensis* is employed as an esculent at the Cape.

Anthriscus.—The species *Cerefolium*, or Chervil, was formerly used for its edible roots, and as a pot-herb.

Apium.—The species *Graveolens* is the Celery, which, by cultivation with the absence of light, is rendered edible.

* Vol. I. p. 271. † Vol. I. p. 99.

Arracacha.—The species *Esculenta*, a native of New Granada, has large esculent roots, resembling the Parsnip in quality, and said to be superior to it.

Bunium.—The species *Bulbocastanum* and *Flexuosum* have edible tubers, which are known under the name of Earth-nuts, or Pig-nuts. The species *Ferulaceum*, a native of Greece, has also edible tubers, which are termed Topana.

Crithmum.—The species *Maritimum*, or Samphire, is employed as an ingredient in pickles.

Daucus.—The root of the species *Carota* is the common Carrot.

Fœniculum.—The species *Capensis* is a Cape esculent; the species *Vulgare*, the common Fennel; and the species *Dulce*, the Sweet Fennel, which is frequently considered to be a cultivated variety of F. Vulgare.

Haloscias.—The species *Scoticum* is the Scottish Lovage.

Helosciadum.—The species *Californicum* is stated, by Mr. Geyer, to possess very delicious roots, which are eaten by the Saptorin Indians in Oregon.

Lichtensteinia.—The Hottentots are said to prepare an intoxicating beverage from the roots of the species *Pyrethrifolia*.

Meum.—The roots of the species *Athamanticum* and *Mutellina* are aromatic and sweet, and form an ingredient in the compound known as Venice treacle.

Œnanthe.—The tubers of the species *Pimpinelloides* is said, by Lindley, to have wholesome roots, but the genus generally must be regarded with suspicion.

Pastinaca.—The species *Sativa* is the Parsnip. The roots of the cultivated plant are well known as a common vegetable.

Petroselinum.—The species *Sativum* is the common Parsley of our gardens.

Prangos.—The species *Pabularia*, a herb inhabiting the arid plains of Southern Tartary, is used as a sheep food.

Sium.—The species *Sisarum* is commonly known under the name of Skirret.

Smyrnium.—The species *Olusatrum*, or Alexanders, was formerly cultivated like Celery.

ANALYSIS OF MANURES.

BY DR. HENRY M. NOAD, F.R.S.

SUPERPHOSPHATE OF LIME.

The manufacture of this important and valuable manure (observes Dr. Anderson) depends on the existence of two different compounds of phosphoric acid and lime, one of which contains three times as much lime as the other. That which contains the larger quantity of lime is found in the bones, and all other natural phosphates, and is quite insoluble in water; but when two-thirds of this lime are removed it is converted into the other compound, which is exceedingly soluble. This change is effected by the use of sulphuric acid, which combines with two-thirds of the lime of the ordinary insoluble phosphate of lime, and converts it into *biphosphate of lime*, which is soluble. If to 100 lbs. of common phosphate of lime the requisite quantity of oil of vitriol be added, 64 lbs. of biphosphate, containing the whole of the phosphoric acid (the valuable constituent) are obtained, the remaining 36 lbs. consists of lime, which, combining with the sulphuric acid, produces 87 lbs. of dry sulphate of lime, or 110 lbs. of the ordinary sulphate or *gypsum*. This is the minimum quantity which can be present, but in actual practice it is liable to be greatly exceeded, more especially where *coprolites* are used, owing to the large quantity of carbonate of lime which they contain, which is also converted into sulphate by the action of the acid, so that it is far from uncommon to find the gypsum twice as great as it would be if materials free from carbonates could be obtained. By employing a sufficiency of sulphuric acid, the whole quantity of phosphoric acid in the phosphate may thus be brought into a soluble state, but in actual practice it is found preferable to leave part of it in an insoluble condition, as where it is entirely soluble its effect is too great during the early period of the season, and deficient at the end. In order to dissolve bones, bone ash, or mineral phosphates, they are mixed with from a third to half their weight of sulphuric acid of specific gravity 1·70 (140° Twaddel). When mineral phosphates, and particularly coprolites, are used the quantity of sulphuric acid must be increased,

so as to compensate for the loss of that which is consumed in decomposing the carbonate of lime they contain. When operating on a small scale, the matcrials are put into a vessel of wood, stone, or lead (iron is to be avoided as it is rapidly corroded by the acid), and mixed with from a sixth to a fourth of their weight of water, which may, with advantage, be used hot. The sulphuric acid is then added and mixed as uniformly as possible. Considerable effervescence takes place, and the mass becomes extremely hot. At the end of two or three days it is turned over with a spade, and after standing for some days longer, generally becomes pretty dry. Should it still be too moist to be sown, it must be again turned over, and mixed with some dry substance to absorb the moisture. For this purpose everything containing lime or its carbonates must be carefully avoided, as they bring back the phosphates to the insoluble state, and undo what the sulphuric acid has done. Peat, sawdust, sand, decaying leaves, or similar substances, will answer the purpose, and they should all be made thoroughly dry before being used. An excellent plan is to sift the bones before dissolving, to apply the acid to the coarser part, and afterwards to mix in the fine dust which has passed through the sieve, to dry up the mass; or a small quantity of bone ash, of good quality, or Peruvian guano may be used. On the large scale, mechanical arrangements are employed for mixing the materials, so as to economise labour, and mineral phosphates, such as apatite, can then be used with advantage. In such cases blood, sulphate of ammonia, soot, and other refuse matters are occasionally used to supply the requisite quantity of nitrogenous substances, but large quantities are also made from bone ash, &c., without these additions.

The composition of superphosphates must necessarily vary to a great extent, and depends not only on the materials, but on the proportion of acid used for solution. The following analysis (Anderson) illustrates the composition of good samples made from different substances :—

	Bones alone.	Bone Ash.	Chiefly Coprolites.	Mixtures containing Salts of Ammonia.
Water	7·74.. 7·79	5·33.. 10·40	5·90.. 10·17	7·07.. 15·82
Organic matter and ammoniacal salts	17·83.. 21·69	6·94.. 4·92	5·10.. 4·13	9·87.. 13·96
*Biphosphate of lime	13·18.. 9·87	*21·35.. 23·09	*12·24.. 13·75	*17·63.. 12·67
Insoluble phosphates	10·31.. 21·17	5·92.. 6·08	16·90.. 0·17	12·60.. 8·40
Sulphate of lime	46·00.. 35·30	56·16.. 47·78	52·39.. 62·62	49·77.. 45·14
Alkaline salts	1·46.. 0·94	traces	2·47.. 0·96	0·06.. 1·07
Sand	3·48.. 3·00	4·23.. 4·30	6·00.. 8·20	3·00.. 2·94
	100·00..100·00	100·00..100·00	100·00..100·00	100·00..100·00
	2·11.. 3·01	0·23.. 0·31	0·11.. 0·57	1·28.. 1·55
*Equivalent to soluble phosphates	20·57.. 15·39	33·33.. 36·02	19·10.. 21·43	27·50.. 19·77

Superphosphates made from bones alone are generally distinguished by a large quantity of ammonia, and rather a low per centage of biphosphate of lime. This is owing to the difficulty experienced in making the acid re-act in a satisfactory manner on bones, the phosphates being protected from its action by the large quantity of animal matter, which, when moistened, swells up, fills the pores, and prevents the ready access of the acid to the interior of the fragments. Superphosphates from bone ash, on the other hand, contain a mere trifle of ammonia, and when well made, a very large quantity of biphosphate of lime. Their quality differs very greatly, and depends, of course, on that of the bone ash employed, which can rarely be obtained of quality sufficient to yield more than 30 or 35 per cent. of soluble phosphates.

Coprolites are seldom used alone for the manufacture of superphosphates, but are generally mixed with bone ash and bone dust. Mixtures containing salts of ammonia, flesh, blood, &c., are also largely manufactured, and some are now produced containing as much as 4 or 5 per cent. of ammonia, and the consumption of such articles is largely increasing.

The following analysis (Anderson) illustrates the composition of some inferior varieties of superphosphates, in the manufacture of which the quantity of sulphuric acid has been reduced,

and consequently containing a smaller proportion of soluble phosphates; these manures are sold in the market for much more than they are really worth:—

Water	21·60	5·37	7·19
Organic matter and ammoniacal salts.	11·62	13·91	8·80
Biphosphate of lime	2·98	2·02	6·42
Insoluble phosphates	25·70	15 80	14·03
Sulphate of lime	23·66	47·52	51·93
Alkaline salts	10·70	3·73	3.43
Sand	3·80	11·65	8·20
	100·00	100·00	100·00
Ammonia	1·32	0·59	0·33

"The deliberate adulteration of superphosphates," observes Professor Anderson, "that is, the addition to it of sand or similar worthless materials, I believe to be but little practised. The most common fraud consists in selling as pure dissolved bones, articles made in part, and sometimes almost entirely from *coprolites*. Occasionally refuse matters are used, but less with the intention of actually diminishing the value of the manure, than for the purpose of acting as driers. It is said that sulphate of lime is sometimes employed for this purpose, but this is rarely done, because that substance is always a necessary constituent of superphosphate in very large quantities; and as farmers look upon it with great suspicion, all the efforts of the manufacturers are directed towards reducing its quantity as much as possible."

There is no manure which requires greater vigilance on the part of the purchaser than superphosphate of lime, because of the great variations in quality; though in consequence of increased competition, and the process of manufacture being better understood, it is much better than it was a few years ago.

Analysis.—The following are the points to be attended to in the chemical examination of this manure.—

I. *Determination of the Water.*—Fifty grains are dried in the air bath annexed at a temperature of about 300° Fahr. until the weight remains constant; the loss represents the amount of moisture absorbed by the superphosphate and the water in the gypsum.

II. *Determination of the relative proportion of soluble and insoluble constituents.*—150 grains of the sample are boiled up with water, and allowed to settle; the decanted fluid is thrown on a filter, and the residue again and again boiled with water, until there is no longer an acid reaction. The insoluble matter is then dried in the air bath at about 300° Fahr., and weighed. Of course, any solid particles that may have been retained on the filter are added; this is best done by drying and burning the filter, and adding the ash.

III. *Determination of the organic matter in the insoluble portion.*—Moisten with a little nitric acid, to peroxidize any iron that may be present, then ignite at a low red heat in a platinum crucible, placed sideways, so as to allow air to have access; when cold, weigh. The loss represents the amount of organic matter, *plus* that of any ammoniacal salts that may have been present.

IV. *Analysis of the insoluble matter.*—Boil for some time with dilute hydrochloric acid, dilute largely, and boil again; filter, wash, dry, ignite, and weigh the residue on the filter, which is *sand* and *clay*. Mix the filtrate and washings well together, and divide into three parts—*a*, *b*, *c*. In *a* determine the *sulphuric acid* (from the gypsum) by *chloride of barium* (see p. 134); mix *b* and *c* together, add *oxalate of ammonia*, and considerable excess of *acetate of ammonia*, and boil. All the lime is hereby precipitated as oxalate; it is collected on a filter, and estimated as sulphate (see p. 6). To the filtrate from the oxalate of lime add tartaric acid and ammoniacal sulphate of magnesia,* which precipitates the phosphoric acid

* It is convenient to keep on hand a stock of *tartarized ammoniacal sulphate of magnesia* for phosphoric acid determinations. The following proportions may be used:—

2 pints of water.
225 grains of tartaric acid.
80 ,, anhydrous sulphate of magnesia.
250 ,, chloride of ammonia.

as ammonio-magnesian phosphate; this is treated as directed (p. 6). Combine the sulphuric acid found in *d* with the quantity of lime requisite to form *gypsum* (40 sulphuric acid + 28 lime); add the remainder of the lime to the phosphoric acid, and enter it as "insoluble phosphate."

V. *Analysis of the soluble portion.*—Divide into three equal parts—*a*, *b*, *c*, transfer to a platinum dish, and evaporate gently on the sand bath, adding, a little at a time, thin *milk of lime*, until a piece of red litmus paper is turned faintly but distinctly blue, showing an alkaline reaction; continue the evaporation to perfect dryness, transfer to the air bath, dry at 320° Fahr., and then weigh; ignite, and weigh again. The difference between the results of the two weighings expresses the quantity of *organic matter* in the aqueous solution. Boil the ignited residue with lime water, and then with distilled water for a considerable time; remove the sulphuric acid from the filtrate by chloride of barium, and then the excess of the barium salt and the lime, by carbonate of ammonia; filter. The filtrate contains nothing but the *alkalies*, which are determined as chlorides as directed (p. 108). Determine the sulphuric acid in *b* by chloride of barium; evaporate *c* to dryness in a platinum dish with excess of carbonate of soda, and a little nitre; ignite the residue, rinse it into a beaker, and dissolve in hydrochloric acid with the aid of a gentle heat. To the clear solution add ammonia, and then acetic acid in excess. If any *phosphate of sesquioxide of iron* is hereby precipitated, filter it off, and divide the filtrate into two equal parts: in one part determine the phosphoric acid by *acetate of sesquioxide of uranium*. The liquid should be boiled after the addition of this reagent, and the precipitate allowed to subside. Fresenius recommends the addition of a drop or two of *chloroform* immediately after the precipitation, and when the liquid has cooled a little, giving the mixture a vigorous shake, which, he says, materially assists the precipitation of the finer particles. These are collected on a filter, the bulk of the precipitate being washed by decantation; the well-washed precipitate is dried and ignited. The filter is also dried and burnt, and its ashes added to the ignited precipitate; the whole is weighed when quite cold, and one-fifth of the weight calculated as phosphoric acid, the composition of *phosphate of sesquioxide of uranium* being

2 (Ur_2O_3)	80·09
PO_5	19·91
	100·00

Determine the *lime* and *magnesia* in the third portion (*c*) by the usual manner.

VI. *Determination of the ammonia.*—Follow the process recommended in the analysis of guano (p. 287).

Those engaged in the frequent analysis of superphosphate of lime and other phosphatic manures will find it far more convenient to estimate the phosphoric acid by the following process, first introduced in Baron Liebig's laboratory as an expeditious method of determining phosphoric acid in *urine*, and lately strongly recommended to the agricultural chemist by Professor Edmund Davy. It is founded on the fact that phosphoric acid possesses a great attraction for *peroxide of iron*, so that when a persalt of that metal is added to a solution containing phosphoric acid, an insoluble combination of the peroxide with that acid is produced, which, under particular circumstances, has the composition, Fe_2O_3, SO_3, in which 80 parts = 56 iron are combined with 72 of phosphoric acid. A graduated solution of iron of known strength is added to the phosphate, and the point, when a sufficient quantity has been added, to combine with all the phosphoric acid present is ascertained; from the quantity of iron employed the amount of acid is calculated, every 56 parts corresponding with 72 parts of phosphoric acid.

Preparation of the Standard Acid.—A certain quantity of the finest piano-forte wire, perfectly clean and free from rust, is dissolved in pure hydrochloric acid, and sufficient nitric acid is afterwards added to convert the proto into perchloride; the excess of free acid is neutralized with ammonia, and a small quantity of peroxide precipitated, which remains undissolved. After agitating the mixture, and allowing it to stand for a few minutes, this is taken up by *acetic* acid at the ordinary temperature; the mixture is largely diluted with water, and graduated in the usual way, so that the amount of iron may be known. The liquid thus formed contains *perchloride* and *peracetate of iron*, with *chloride of ammonium*, *acetate of ammonia*, and a little free *acetic acid*.

To the hydrochloric solution of the phosphate to be examined, ammonia is added in slight excess, and then acetic acid so as to re-dissolve completely the phosphate precipitated by the ammonia, and leave the acid in slight excess; the standard solution of iron is added from a graduated burette (Fig. 2, p. 103, vol. i.), until the iron begins to predominate; this is determined thus:—After the liquid has remained for a few minutes, with occasional stirring to effect a complete combination of the oxide of iron with the phosphoric acid, a drop of the solution is taken out on the end of a glass rod, and brought into contact with a piece of close and thick textured filtering paper, under which is placed some ordinary filtering paper which has been previously saturated with a strong solution of *gallic* acid. When sufficient iron solution has been added to throw down all the phosphoric acid in an insoluble form, and a *minute excess over*, a light purple stain is produced; the experiment is repeated a second and a third time, the phosphate under examination being dissolved in a given quantity of solution, and a certain amount being taken out for each examination.

PHOTOGRAPHIC CHEMICALS.—IX.

Potassium, Iodide of. KI; atomic weight, 166.—This important salt is prepared by adding iodine to liquor potassæ until the solution turns brown. The mixture contains iodide of potassium and iodate of potash. By evaporating and heating to redness the latter salt is converted into iodide of potassium. As its purity is of great consequence, a list of the probable impurities and the method of testing for them will be useful. Iodate of potash may be detected, according to Mr. Hardwich, by adding a crystal of citric acid to the solution, if much iodate is present a yellow tinge is soon perceived, which is caused by the liberation of iodine. By adding a little starch, purple iodide of starch is formed. Carbonate of potash is a common impurity, to detect it add a few drops of solution of chloride of barium. If the precipitate dissolves on the addition of a drop of *pure* dilute nitric acid the impurity is carbonate; if it fails to do so it is sulphate of potash. Iodide of potassium containing these impurities may be purified by re-crystallization from alcohol of ·805, in which carbonate, sulphate, and iodate of potash are insoluble. The alcoholic solution should be kept in a cool, dark place, otherwise decomposition and discoloration are apt to take place. The pure salt occurs in fine cubes, which are slightly deliquescent, and of a faint yellow colour.

One ounce of alcohol ·836 dissolves one drachm, and absolute alcohol ·794 dissolves only 8 grains. The alcohol used for iodising solutions must not, therefore, be too strong, or small pin holes will be found in the negative, formed by particles of the undissolved salt.

Pyrogallic Acid. $C_6 H_4 O_4$; atomic weight, 84.—As its name implies, this substance is formed by the action of heat upon gallic acid. At a temperature of 410° gallic acid is decomposed, and pyrogallic acid sublimes and condenses in lamellar crystals. Although called an acid it is strictly neutral, and forms no salts. It is very soluble in water, and from being one of the most powerful deoxidisers known, it is of great use as a developing agent. Finely powdered galls are treated with water until they are exhausted. The infusions are collected and evaporated to dryness. The mass thus produced is powdered and spread on an iron vessel three or four inches deep and a foot in diameter; the top is covered with a piece of blotting paper, pierced with pin holes, and the whole is surrounded by a paper cap, twelve or eighteen inches high. Heat is then cautiously and uniformly applied for some hours, great care being taken that the temperature does not rise above 410°, or metagallic acid will be formed. On uncovering the apparatus the pyrogallic acid will be found condensed on the interior of the paper cap, while the other products, for the most part liquid, are absorbed by the blotting paper. The low price at which pyrogallic acid is sold has induced many to take less pains in its manufacture, by which means samples are continually found which contain impurities of an organic nature. These have the effect of giving opacity to the developed image, rendering the negative dense and smoky, while the delicate shadows are not developed at all. These imparities cannot be detected by ordinary means. Good samples, however, are characterised by the peculiarly snow-white silky appearance of the crystals. From being a very light substance pyrogallic acid is exceedingly difficult to weigh without filling the air with its flakes. It should, consequently, never be weighed when any silver solutions are near.

By re-crystallising it from pure alcohol a denser quality may be obtained, but being less beautiful in appearance the public are apt to be suspicious of it.

Silver. Ag; atomic weight, 108.—Pure silver foil is often used to add to collodion, which has become discoloured by keeping. It restores its sensitiveness, partially by forming iodide of silver with part of the free iodine. Pure zinc or cadmium will answer the same purpose.

Silver Ammonio-nitrate of.—Ammonio-nitrate of silver is formed by exposing crystals of nitrate of silver to ammoniacal gas. Heat is produced sufficient to fuse the resulting compound, which is white. The mixture made by photographers, and called ammonio-nitrate of silver, is a solution of oxide of silver in ammonia, with a certain quantity of nitrate of ammonia and free ammonia. There are two methods of making it:

Nitrate of silver	60 grains.
Water.....	1 ounce.

Dissolve, and add, carefully, a few drops of strong liquid ammonia. Oxide of silver is at first thrown down, but by cautiously adding the ammonia it is re-dissolved. It is a good plan to add a drop or two of nitrate of silver solution until the slightest possible turbidity takes place, in order to avoid the presence of free ammonia.

Nitrate of ammonia has the property of dissolving oxide of silver; Mr. Hardwich therefore recommends the following formula as superior to the last, inasmuch as no liberation of ammonia takes place, and the danger of spoiling neighbouring baths is obviated. "Dissolve 60 grains of nitrate of silver in half an ounce of water, and drop in ammonia until the precipitated oxide of silver is exactly re-dissolved. Divide this solution into two parts, to one add nitric acid until a piece of litmus paper is reddened by excess of acid, then mix the two, fill up to one ounce of water, and filter." Ammonia nitrate of silver is applied to the paper by brushes made for the purpose, and never by floating. The solution easily decomposes, unless preserved from the light. The brushes used must be kept scrupulously clean, and should be made of hair and wood only, without any metal, wire, or pins. Albumenised paper cannot be used in this process. The prepared paper is very sensitive, gives a vigorous image, and is extremely prone to decomposition.

Silver, Nitrate of. Ag O, NO_5; atomic weight, 170.—This most important salt is prepared, in its purest form, by dissolving pure metallic silver in pure nitric acid, s. g. 1·25. The solution should be evaporated and recrystallised repeatedly; by this means, freedom from organic matter is ensured. The pure salt occurs in large hexagonal or rhombic tables, which should be perfectly colourless and free from smell. The solution should be quite clear, and remain free from any brown tinge on prolonged exposure to light. Commercial nitrate of silver is made by dissolving silver coins or plate in pure nitric acid, evaporating and crystallising. The crystals are then washed with nitric acid, re-dissolved, and crystallised. The resulting salt generally contains copper and other impurities, and the crystals generally contain portions of nitric acid in their interstices. The consumption of nitrate of silver being very large, and the quality not at all constant, various methods have been recommended in order to obtain the pure salt. Fusing the nitrate, in order to drive off the nitric acid, was recommended, but it was found to produce *nitrite* of silver, which was a worse impurity than the nitric acid. Re-crystallisation seems to be the only proper remedy. The refiners of gold and silver make great quantities of nitrate of silver, very free from impurity, in the process of *parting*. Being a by-product, they are enabled to sell it at a price a little over the value of the silver contained in it. This should be dissolved and re-crystallised two or three times, until the crystals appear pretty large and perfect, and free from smell. This extra trouble adds but a few pence to the original price. If, however, a good sample cannot be obtained in the first instance, the best way of proceeding is to throw down the chloride by pure chloride of sodium, and reducing it to pure silver by fusion with twice its weight of carbonate of soda. The resulting button is beaten out into a thin plate on an anvil, and re-dissolved in pure nitric acid. Nitrate of silver has been offered for sale at 3*s.* per ounce; but, as an ounce of the salt contains pure silver worth 3*s.* 1½*d.*, it must have been necessarily adulterated with nitrate of potash or lead. Metallic impurities may be easily detected by dissolving a few crystals in distilled water. On precipitating by pure hydrochloric acid, the resulting filtrate should evaporate without residue, and the precipitate should dissolve perfectly in ammonia. All baths

containing nitrate of silver should be kept carefully in the dark, as, when once used, they become contaminated with organic matter, which causes them to be decomposed by the light. Nitrate of silver is highly poisonous when taken internally. The best antidote is a solution of common salt. The crystallised salt should never be kept, or weighed in paper. When dry and pure, the light has no action on it; any discolouration of the crystals under such circumstances, shows the presence of organic matter. Mr. Hardwich states that the pure salt is alkaline to test-paper.

Silver, Oxide of. Symbol Ag O; atomic weight, 116.—Oxide of silver has been recommended as a remedy for an acid bath. It being slightly soluble in a solution of nitrate of silver, it will be necessary to re-acidify the bath faintly after its use. It is made by adding pure *liquor potassæ* to a solution of nitrate of silver, and washing and drying the precipitate.

Soda, Acetate of.—The ordinary crystallised form of this salt is pure enough for use in photography. Acetate of soda is added to the protosulphate of iron, to give proper intensity of deposit when that salt is used for developing negatives. It is added to the nitrate of silver bath to increase its intensity. Three grains should be dissolved in a drachm of water, and added to twenty ounces of the bath. A precipitate of acetate of silver is formed, but redissolves on stirring. It is by the formation of this latter salt that the intensity is produced.

Soda, Carbonate of.—Carbonate of soda is used to correct acidity in the nitrate of silver bath. It should be added until a distinct cloud is perceived; the bath should then be filtered and slightly acidified. It is also used in the preparation of the alkaline chloride of gold toning bath. The ordinary anhydrous carbonate is sufficiently pure for these purposes.

Soda, Citrate of.—This salt, which is prepared by adding 56 grains of citric acid to 66 grains of the *dry* sesquicarbonate, dissolved in a suitable quantity of water. These quantities give 100 grains of citrate of soda. It is used in chlorising plain paper, being said to have the property of intensifying the image and rendering the colour of it more pleasant; but it does not appear to have come into general use. Mr. Sutton, of Jersey, supplies its place by lemon juice, a few drops of which, added to the chlorising solution, certainly have a marked improvement. It cannot be used for albumenised paper, as it precipitates the albumen.

CHEMICAL NOTES.

Nitrous and Nitric Acid in the Atmosphere.—By passing large volumes of air through solutions of carbonates of potassium and lead, Cloetz obtained the *nitrates* of these metals. Should this observation be confirmed by further experiments, considerable doubt will thereby be thrown upon the accuracy of those ozonometric results obtained by the colouration of iodized papers, as it is quite clear that the liberation of the iodine may be occasioned not by *ozone* but by *nitrous* or *nitric* acids.

Action of Water on Lead Pipes.—An American chemist (Mr. J. R. Nichols), has pointed out a fact which is deserving of attention, viz., the tendency of water to become impregnated with lead when it traverses leaden pipes in which there are violent twists and turns. "I have in my possession," he says, "a section of supply pipe removed from the aqueduct of a neighbouring city, in a portion of which corrosive action has proceeded so far as to cause leakage. The part thus acted upon was confined to an *acute angle*, and there is evidence to show that the plumber, in placing it in position, bent it in the wrong direction, thus creating the necessity for another turn in the opposite direction. This pipe had doubtless been subject to two violent turns, which seriously impaired the homogeneity of the metal. An examination of lead pipes removed from buildings will certainly show that where there has been any perceptible amount of decomposition it has been confined to the angles and depressions in its course." Mr. Nichols refers this action to a change in the electrical conditions of the lead by the twisting, whereby a galvanic action is set up, giving rise to chemical decomposition; should the pipe be so far injured by the twisting as to require soldering, and should copper or alloy come any where into contact with the interior of the pipe, an electrical action would certainly be set up and the water would be liable to become impregnated. Mr. Nichols draws attention to the fact that during the erection of new houses it not unfrequently happens that pieces of mortar get deposited in the lead pipes; these would be carried to the angles and depressions and would promote the oxidation of the lead by virtue of the lime which the mortar contains. The simple warning suggested by these observations is to avoid as much as possible all angles

and depressions in placing lead pipes in position in buildings, particularly those that lead to the culinary department.

Guano.—Liebig has lately been making some elaborate investigations of the different kinds of Peruvian guano, and has come to the conclusion that the variations observed in their agricultural value are mainly attributable to the varying quantity of *oxalic acid* which they contain. He says that in order to know the value of any sample of this manure the amount of this acid should engage the attention of the chemist equally with that of phosphoric acid and nitrogen. The fertilizing power of guano cannot depend solely on the quantity of ammoniacal salt and uric acid it contains, because it is well known that ammoniacal salts combined in the same proportions as the nitrogen of the guano will not produce the same results.

Fumic Acid.—M. Paul Thenard, who discovered this acid, has recently published the results of his long investigation into the circumstances of its formation. He has arrived at the conclusion that it is a compound of ammonia or certain ammoniacal salts with vegetable principles. It is formed in abundance when *straw leaves* or *sawdust* are moistened with ammonia or sulphate and carbonate of ammonia; he regards it as highly important to the nutrition of plants, and mentions the fact that a farmer near Chalons having obtained an excellent manure by sprinkling his dung heap with ammoniacal liquor, he was induced to examine the dung heap and found abundance of fumic acid or rather of fumate of lime.

New Test for Sulphur.—A dilute solution of molybdate of ammonia in hydrochloric acid possesses, according to Schlossberger, the property of colouring *blue*, if traces of sulphur be present. By this test the presence of sulphur may be recognised in a single hair.

Nature of the deposit which forms upon the Copper employed in Reinsch's Test for Arsenic.—According to Lippert the crust in question contains 32 per cent. of arsenic and 68 of copper, the compound being a definite alloy ($As\ Cu_4$). The delicacy of this test (well known, as Reinsch's test) is evidently referable to the large amount of copper which the characteristic coating contains, a proportionably small quantity of arsenic being thus obtained in an enlarged, and as it were more tangible, form. "But on the other hand," observes Lippert, "it is not easy to prove in a simple manner the presence of arsenic in this crust, for only a small portion of the arsenic can be volatilized in a current of hydrogen; and even if the alloy be first oxidized in a current of air, and then reduced in a current of hydrogen, the percentage of arsenic only falls from 32 to 20. By far the largest portion of the arsenic is therefore kept out of sight. It was formerly supposed that the steel grey deposit on the copper was pure metallic arsenic.

Formation of Formic Acid by the direct reduction of Carbonic Acid.—When potassium was spread out in a thin layer on a flat dish, and this placed under a bell jar standing over milk warm water, and kept continually filled with carbonic acid, the potassium was found by Kolbe and Schmist, in twenty-four hours, to be converted into a mixture of bicarbonate and of formiate of potash. The reaction may be written thus:—

$$2\,K + 2\,C_2\,O_4 + 2\,HO = KO\,C_2\,HO_3 + \left.\begin{matrix}KO\\HO\end{matrix}\right\}C_2\,O_4$$

The above mixture was supersaturated in the cold with sulphuric acid, the acid liquor poured off from the bisulphate of potash distilled, and the distillate neutralized with carbonate of lead. On evaporating the hot filtered solution chemically pure formiate of lead was obtained.

New Mode of preparing Oxygen.—De Luca fills a tubulated retort three-quarters full with pumice and concentrated sulphuric acid, and lutes on to it a porcelain tube by means of a mixture of asbestos and clay; the tube also contains pumice. He heats the tube to redness, and passes over it the vapour of sulphuric acid. Oxygen gas is disengaged with regularity, and is easily purified; in one operation he obtained from two ounces of acid a gallon and a quarter of gas. The process is analogous to that in which iron is prepared by decomposing water by iron, and it is said not to be more difficult.

Electrolysis of Organic and other substances by a Battery of 1000 *Elements.*—MM. Lapschin and Tichanowitsch describe the following experiments:—*Salicine* was decomposed first into grape sugar and saligenine; then the latter was oxidized into hydride of salicyle and to salicylic acid. *Crystallized acetic acid* was rapidly decomposed by 900 elements, a rapid disengage-

ment of gas taking place at the carbon pole, and an amorphous mass of carbon being deposited at the zinc pole. Neither *alcohol* nor *ether* were attacked in the least degree by the full power of the battery; the same was the case with *valerianic acid*, *turpentine*, and *anhydrous boracic acid*. *Bisulphide of carbon* did not yield to 950 elements. *Silicic acid*, in the pulverulent form, in a clay crucible became ignited, the side of the crucible nearest the zinc pole was perforated, and a platinum globule melted through, which was found to contain silicon. 370 elements produced an energetic action with powdered *oxide of zinc*, the reduced metal becoming ignited; the same decomposition ensued with 60 elements. 40 elements acted strongly on *sulphuret of antimony*, sulphur being liberated and ignited at the carbon pole. *Realgar* required 260 elements for its decomposition, the products of the action, viz., sulphur and arsenic, immediately taking fire, and becoming converted into sulphurous and arsenic acids.

HENRY M. NOAD.

CONDILLAC WATER.

THIS water was termed by Dr. Dupasquier, of Lyons, the "Queen of table waters," and is said by many, eminent in the profession, to be superior to all other kinds of mineral beverages. In the report published by order of the Minister for Agriculture and Commerce, for the year 1860, we find the following analysis of the Condillac Springs:—

SPRING "ANASTASIE."

In 1000 Grammes of Liquid	
	Litres.
Free Carbonic Acid, in Volume	0·548
	Grammes.
Bicarbonate of Soda (Anhydrous)	0·166
,, Lime	0·359
,, Magnesia	0·035
Anhydrous Sulphate of Soda	0·175
Chloride of Sodium and Calcium	0·050
Silicate of Lime and of Alumina	0·398
Iodide of Potassium, and a Salt of Potass	Perceptible.
Oxyde of Iron Crenated and Carbonated	0·010
Organic earthy matter	Not determined.
Fixed Mineralizing Principles	2·193

SPRING "LISE."

In 1000 Grammes of Liquid.	
	Litres.
Free Carbonic Acid, in volume	0·053
	Grammes.
Bicarbonate of Soda (Anhydrous)	0·155
,, Lime	0·954
,, Magnesia	Little.
Anhydrous Sulphate of Soda	0·090
,, ,, Lime ... } Silicate of Lime and of Alumina .. }	0 715
Chloride of Sodium and of Calcium	0·170
Iodide of Potassium, and a Salt of Potass—Silicates	Perceptible.
Oxyde of Iron Crenated and Carbonated	0·031
Organic earthy matter	Not determined.
Fixed Mineralizing Principles	2·115

But in addition to the principles contained as above, Dr. O. Henri has established, to the satisfaction of the Imperial Academy of Medicine, that the Condillac Waters contain manganese in valuable distributive degrees.

Both the "Anastasie" and the "Lise" spring from the same ground, a short distance apart, and their nature, as chemical analysis has demonstrated, are almost identical. The

first-named spring, which produces 1,650 gallons in twenty-four hours, is agreeable to drink, and may be substituted for the natural Seltzer water. The water of the "Lise" is much less abundant, only yielding 180 gallons in twenty-four hours, is also acidulated, and more pungent, is not disagreeable to drink, which is explained by its descriptive parts. These waters have already been used with success in medical practice, and the chemical composition, analogous to that of other well-known mineral waters, justifies their advantageous properties.

In addition to the examination of these waters by the "Academy," they have been investigated by Dr. Rognetta, of Paris (author of "Essays on the Principal Mineral Springs of Europe"). This learned physician gave his opinion in a work which appeared a short time since, in a very favourable and flattering manner.

As far as our own experience and knowledge of these waters go, we cannot but admit of their practical importance. As to the degree of carbonic acid gas they contain, we must state that it is much greater at the spring than under any other circumstance. By the very fact of their being cold, the Condillac Waters have the immense advantage of keeping their gas,—an advantage not found, either in the Vichy waters (which being thermal, the heat carries off the gas) nor in the natural Seltzer waters, since these latter do not contain much of it. Such a condition gives the Condillac Waters a decided superiority, especially as Hygienic waters, or for common use as cooling and refreshing beverages. Their taste is delicious and their benefit promptly felt, whether taken at table with wine, before, after, or at meals, alone, or with fruit-flavoured syrups. They are valuable medicinally in weak or irritable stomachs, predisposed to inflammation, flatulency, and gastric pains.

An Introduction to Practical Chemistry including Analysis. By JOHN E. BOWMAN, F.C.S. Fourth Edition. Edited by CHARLES L. BLOXAM. London: John Churchill.

"So essentially is chemistry an experimental science, and so almost exclusively is it built up of facts which have been elucidated by experiment, that without experimental illustrations it would be quite impossible to teach or to study it with any great amount of success. It is not enough, however, for the student to see experiments performed by others; he must, if he would master even the general principles of chemistry, learn to make experiments himself; and he will, probably, be surprised how much more easily he will retain in his recollection those phenomena (as well as the principles they illustrate) which his own hands have been the means of producing. This is especially the case when he is enabled, while operating in the laboratory, to learn and study the theory of the changes which take place under his direction."

The above paragraph forms the introduction to the best elementary treatise on practical chemistry that has yet been published in this country, and indicates the author's views respecting the proper method of acquiring a sound knowledge of the principles of the science. This book has for many years been at once "the guide, philosopher, and friend," of the students in the King's College Laboratory, and of numerous diligent home-workers, who have been enabled by its assistance to go through a systematic course of experiments, without employing complicated or expensive apparatus. The authors of most of the elementary works on chemistry, seem to have lost sight of the many difficulties of manipulation, and have described the different operations far too vaguely for the beginner, who has no master to consult. Professor Bowman, throughout his excellent text-book, has carefully avoided vagueness, and has given all the explanatory details which are wanting in other works, so that the student cannot fail to understand the rationale of the operations through which he is conducted. The apparatus required for each experiment is clearly described, and all the changes and decompositions which take place in the experiments are shown by means of chemical symbols and equations. The work consists of upwards of three hundred pages, and is profusely illustrated by well-executed woodcuts. The arrangement of the subjects could not well be improved, and the various devices which have been taken advantage of to facilitate reference are extremely ingenious; thus in the chapters on analysis, the words and sentences

which give the results of the different experiments are printed in bold black letters, and they strike the eye at once. The book is divided into five parts, which are again divided into chapters. In Part I. full directions are given for conducting various operations in practical chemistry; such as the preparation, collection, and examination of the gases, the distillation of liquids, glass working, the examination of substances with the blowpipe, taking the specific gravity of solids and liquids, heating substances in gases, and, lastly, volumetric analysis. The chemical symbols and equivalents, and the general laws of the science, are also included in this portion of the work. The following extract, relating to the symbols, will give our readers some idea of the clear manner in which everything is explained :—

"Each of these symbols expresses one equivalent or atom of the substance which it represents. Thus H stands for one atom or equivalent of hydrogen; Cu for an equivalent of copper; *Hg* for one of mercury.*

"When a small figure is placed to the right of a symbol, rather below the line, it means that there is that number of equivalents of the substance present. Thus, Pb_2 means two equivalents of lead; O_5 five equivalents of oxygen; H_{10} ten equivalents of hydrogen.

"Two or more symbols placed together, signify that the elements which they represent are chemically united, without expressing any view of the *constitution* of the compound—that is, of the manner in which the elements are grouped. Thus, *HO* stands for water, which is a compound of one equivalent of hydrogen, and one of oxygen; SO_3 represents anhydrous sulphuric acid, composed of one equivalent of sulphur and three of oxygen; $C_{12}H_{10}O_{10}$ represents starch, which consists of 12 equivalents of carbon, 10 of hydrogen, and 10 of oxygen, chemically combined together.

"When symbols are separated by a comma, they are intended to represent the manner in which the elements are grouped together in the compound. Thus, sulphate of potash, which contains one equivalent of potassium, one equivalent of sulphur, and four of oxygen, is written KO,SO_3, implying that it may be regarded as a compound of potash (KO) with anhydrous sulphuric acid (SO_3), this view being the most convenient for the explanation of most of the chemical changes in which this salt takes part.

"When the sign + is interposed, it indicates that the substances between which it is placed are less intimately united. Thus, in crystallized carbonate of soda ($NaO,CO_2+10\,Aq$), we have sodium and oxygen in the soda, and carbon and oxygen in the carbonic acid, combined in the closest and strongest manner; the soda and carbonic acid thus formed are separated by a comma, showing that they are held together by what we may here call the second degree of affinity; while the 10 equivalents of water of crystallization, separated by the sign +, are held by a much weaker force, so feeble indeed that a very moderate heat is sufficient to expel them.

"The sign + is used also to separate the symbols of substances which are entirely disunited, thus the addition of hydrochloric acid to carbonate of lime is represented by CaO,CO_2+HCl.

"A large figure placed immediately before a symbol, multiplies all the symbols as far as the next comma or + sign. Thus, in the common phosphate of soda ($2\,NaO,HO,PO_5$) there are two equivalents of soda, one of water, and one of phosphoric acid, combined together. If a large figure were placed before the whole formula enclosed in brackets, thus, $5(2NaO,HO,PO_5)$ it would represent 5 equivalents of the entire salt.

"It is really wonderful how much these little symbols are capable of expressing, and how often and completely they assist in simplifying and rendering intelligible even the most complicated chemical changes; for besides the information they convey relative to the composition of the substances which they express, they can be so combined in the form of equations, as to show in the most perfect manner, the various compounds which result during chemical decompositions. For this purpose, the symbols of the substances employed are placed together so as to form one side of the equation: on the other side are placed those of the substances which are produced during the decomposition; and as no atom of matter is lost during these transformations, it necessarily follows that the value of both sides of the equation must be equal. For example, the decomposition of carbonate of lime by hydrochloric acid may be thus represented:—

"$CaO,CO_2+HCl=CaCl+HO+CO_2$.

"Here we place the symbols of carbonate of lime and hydrochloric acid on one side, and on the other those of chloride of calcium, water, and carbonic acid, which are produced during the decomposition; and it will be observed that on each side there are exactly the same number of equivalents, viz., 1 of calcium, 3 of oxygen, 1 of carbon, 1 of hydrogen, and 1 of chlorine.

"I have ventured to introduce a slight modification of the usual mode of printing the symbols, which will enable the student to see at a glance whether the substances expressed are in the solid, liquid, or gaseous form.

"Those in the solid state are printed in strong Roman type, as Pb, lead. Liquids or substances in solution, are printed in strong italics, as *HO*, water; and gases or vapours are represented by fine hair letters, as H, hydrogen, HO, steam.

"Thus, in the above equation, liquid hydrochloric acid (*HCl*) is poured on solid carbonate of lime (CaO,CO_2); chloride of calcium (*CaCl*) is formed, which remains in solution, together with carbonic acid (CO_2), which passes off in the gaseous form.

The recognition of metals and non-metallic bodies in their most frequent forms of com-

* The student is reminded that atom and equivalent are not necessarily synonymous.

bination, is treated of in Part II, which we can recommend as an admirable introduction to chemical analysis. In Part III., the student is taught to analyze unknown substances; and in Part IV. the difficulties of quantitative analysis are smoothed over for him. Part V. treats of the examination and uses of re-agents. An appendix, containing useful tables, blowpipe exercises, lists of substances for analysis, and a capital glossary of chemical terms, ends this admirable work. In the fourth edition, which has been edited by Professor Bowman's successor at King's College, many important alterations have been made in the portion devoted to chemical analysis. A division of the substances to be detached into metallic and non-metallic bodies has been adopted, instead of the older division into bases and acids, by which much ambiguity is avoided. In the systematic course of quantitative analysis, a wider range has been taken, so as to admit cases not provided for in preceding editions, and more care has been employed to ensure the detection of the constituents of such complex compounds as are met with in the analysis of ores and minerals. This part of the work has been entirely re-written. The chapter referring to the use of the blowpipe has been enlarged, so as to include the detection of all the ordinary elements which admit of recognition by this instrument, and a systematic course for the examination of unknown substances has been added. The method described in the section on alkalimetry has been modernized, and the determination of iron by means of permanganate of potash has been added, in order to afford the student in this chapter a fair illustration of the methods of volumetric analysis, now so generally employed by chemists. The concluding chapter, giving directions for improvising re-agents, or substitutes for them, when they cannot be otherwise procured, is another new feature in the edition lately issued.

NEW BOOKS.

Anderson (T. M'Call), On the Parasitic Affections of the Skin. 5*s.*

Book (The) of Trades; or Circle of the Useful Arts. 13th edition. 3*s.* 6*d.*

Bristow (Henry William).—A Glossary of Mineralogy. 12*s.*

Cooper's Dictionary of Practical Surgery and Encyclopædia of Surgical Science. New Edition, brought down to the Present Time. By Samuel A. Lane. Assisted by various Eminent Surgeons. 2 vols. Vol. I., 25*s.*

Manley (W. H.)—A Popular Treatise on the New Metrical System of France, its Moneys, Weights, and Measures; and a Comparison of the same with the Moneys, Weights, and Measures of England. 6*d.*

Reynolds (J. Russell)—Epilepsy; its Symptoms, Treatment, and Relation to other Chronic Convulsive Diseases. 10*s.*

Sowerby (John E.)—The Grasses of Great Britain. Illustrated by John E. Sowerby. Described, with Observations on their Natural History and Uses, by Charles Johnson. 34*s.*

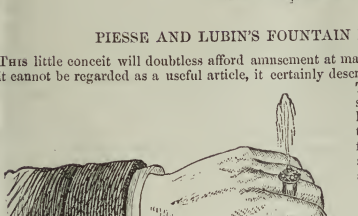
Tomlins (Thomas Edlyne)—The New Bankruptcy Act (23 and 24 Vic. cap. 138), complete; with an Analysis of its Enactments, the Unrepealed Clauses of the Act of 1849, showing their Application to the new Act, 1861, and an Index. 5*s.*

PUBLICATIONS RECEIVED.

Pharmaceutical Journal.—Technologist.—Geologist.—Dublin Hospital Gazette.—Practical Mechanic's Journal.—Civil Engineer.—Journal of the Society of Arts.—American Journal of Science and Art (New Haven).—American Journal of Pharmacy.—Medical and Surgical Reporter.—Dental Cosmos (Philadelphia).—Eclectic Medical Journal.—Boston Medical and Surgical Journal.—Tilden's Journal of Materia Medica (New Lebanon).—Maryland and Virginia Medical Journal (Baltimore).—Savannah Journal of Medicine.—Keith's Journal of Indigenous Materia Medica (New York).—Scientific American.—American Medical Times.—American Agriculturist.—Drug Reporter (New York).—The Druggist (Cincinnati).—Jamaica Quarterly Journal.—Revista Farmaceutica (Buenos Ayres).—Bulletin des Travaux de la Société de Pharmacie de Bordeaux.—Canadian Naturalist and Geologist.

PIESSE AND LUBIN'S FOUNTAIN FINGER RINGS.

This little conceit will doubtless afford amusement at many a Christmas party, and though it cannot be regarded as a useful article, it certainly deserves notice as a perfumery novelty.



The action of the ring is plainly shown by the engraving. By the least pressure, the possessor of this tiny fountain can cause a jet of perfume to rise from it at any time desired: thus every one can carry to a ball, concert, or public assembly, enough scent for the evening.

The practical application of this invention causes a good deal of merriment and laughter.—A gentleman who abhors perfume, unless it be snuff, "squeezing" a lady's hand, will receive a shower of the eternal Frangipanni or Kiss-me-quick, much to the delight of all present at being thus sweetly "found out." The rings can be refilled with perfume with the greatest ease—thus: press the back of the ring nearly flat, pour scent into a cup and dip the ring into it; the elasticity of the ball will then draw the perfume into the interior till full. Each ring will hold about half an ounce of the perfume. The invention has been registered.

SAVORY'S GRANULATED EFFERVESCING CITRATE OF IRON AND QUININE, AND CITRATE OF QUININE.

In our last number we called attention to the mode of manufacture of effervescing granular medicines, particularly the effervescing carbonate of iron. From the general favour with which these exceedingly elegant preparations have been received both by the trade and the public, it is obvious that they are coming into very general use, and that they will be applied to the administration of a variety of substances that are not of themselves incompatible with the vegetable acids and the bicarbonate of soda employed in the preparation.

We believe that the more frequent employment of remedies of an elegant and unobjectionable form is of more importance than is frequently imagined—a patient often refusing to take nauseous though perhaps important medicines who would readily take the same remedies in a less objectionable form; hence we are always glad to notice any improvement, having for its object the rendering of medicaments less obnoxious to the palate. Under this class of improvements we may rank the two extremely elegant compounds named at the head of this notice; they are white granular solids, rapidly dissolving in water with brisk and lively effervescence, and furnishing clean, transparent, colourless solutions of a really pleasant and tonic taste.

The more simple contains one grain of citrate of quinine to each dram, and the other possesses, in addition, two grains of citrate of iron.

The preparations are obviously very carefully made, and are stated to retain their properties unchanged for any length of time if kept from access of moisture. To a convalescent, requiring the continued use of either iron or quinine, we can hardly imagine a greater boon than these will prove themselves to be, as, whilst retaining all the potency of the drugs, they are as pleasant as a glass of soda water.

NEW DOUBLE-CYLINDER OIL LAMP.

In our February number we called attention to an improved double-cylinder burner, designed for gas, invented by Dr. Frankland. The principle has been since applied to oil lamps. We have seen some solar lamps thus arranged; the heated air with which the flame is fed effects a remarkable improvement in the flame, and enables the commonest oils to be used with advantage. We hope to illustrate the arrangement in an early number.

INTERNATIONAL EXHIBITION OF 1862.

In our October issue (page 305) we described the general arrangements for the Chemical and Pharmaceutical department of the World's Show, and named the members of both the Committee of Advice, and the London Trade Committee. The Pharmaceutical Society have since appointed a third Committee for promoting the formation of a complete collection of Drugs and Preparations for exhibition. The following statement has been circulated by this body :—

At a Meeting of the Council of the Pharmaceutical Society, held on the 7th of August, 1861, a communication addressed to the Council, by Professor Redwood, a member of the Committee of Advice, appointed by Her Majesty's Commissioners to Class II., *Chemical and Pharmaceutical Products and Processes*, having been read,

It was resolved—

> "That a Committee be appointed with power to carry out the objects contemplated in Dr. Redwood's letter in reference to the Exhibition of Drugs and Pharmaceutical Preparations in the International Exhibition of 1862."

The objects referred to are explained in the following resolutions, which were passed at the first meeting of the Committee on the 23rd of August :—

1. That it is desirable to ensure, as far as possible, at the International Exhibition of 1862, such an exhibition of substances used in medicine as shall fairly represent the existing state of Pharmacy in this country.

2. That the formation of a collection of Drugs and Pharmaceutical Preparations contributed by different exhibitors, but arranged systematically in one large group, comprising, if possible, all the substances used in medicine in this country, would tend to fulfil the object contemplated in the foregoing resolution.

3. That it is desirable to have a separate collection, comprising all the articles described in the forthcoming British Pharmacopœia, forming a distinct group, and that there be only one specimen of each article in this group, such specimens to be approved by this Committee.

It has also been resolved as follows :—

4. That it is desirable to adopt, as far as possible, one uniform method of displaying the articles exhibited in this collection.

5. That the articles exhibited shall not be displayed in glass cases, but merely arranged on shelves, so that they may be examined by the public under the supervision of an attendant, who shall have charge of the collection.

6. That each exhibitor shall provide the bottles or other vessels in which his specimens are exhibited, that he may attach his name to his specimens or not as he desires, and that the specimens in either case shall be considered his property.

7. That exhibitors be applied to for contributions towards defraying the necessary expenses incurred in carrying out these arrangements, and that subscriptions be also received from Members of the Committee and others for the same purpose.

COMMITTEE—The Members of the Council of the Pharmaceutical Society, the Professors of the Society, Messrs. Allchin, Barnes, Bastick, Brewer, Cracknell, Darby, Garle, D. Hanbury, Edward Horner, Robert Howard, Samuel Howard, T. Morson, Jun., and R. Warington. *Treasurer*—Mr. Thomas Hyde Hills, 388, Oxford-street. *Honorary Curator*—Mr. John Garle, 2, Paddock Villas, Kilburn. *Honorary Secretary*—Mr. Elias Bremridge, 17, Bloomsbury-square.

The above statement is published in the *Pharmaceutical Journal*, with the following editorial comments :—"We have reason to believe that a large number of our Members, as well as others, will desire to join in this undertaking, and early information should, therefore, be given to the Secretary of the wish to exhibit, and of the substances proposed to be exhibited, so that the Committee may make such arrangements as will ensure a tolerably complete collection, by pointing out from time to time the preparations which have been promised, and those which still remain to be provided. It is not yet known what space at the Exhibition can be obtained for this collection, and the number of specimens of the same preparations from different exhibitors will necessarily be limited by the amount of space at the disposal of the Committee. The Council of the Pharmaceutical Society have given their permission for any specimens which exhibitors may have ready, to be deposited at their house, where they will be arranged in readiness for their being sent to the Exhibition building. The honorary Curator will superintend this part of the work, keeping a list of such specimens, and com-

municating with those who may be preparing to co-operate in the undertaking. It should be understood, with reference to manufactured substances, that those articles only should have the exhibitor's name attached to them which he has either produced, or to the production of which he has in some way contributed."

A Tragic Story.—On the 30th ultimo, an inquest was held at Chester on the body of a young man named Davies, who had died from the effects of poison administered by his own hand. The story of his death is a very painful one, but as the unhappy youth was a member of the trade represented by this journal it cannot fail to interest our readers. About two months since, George Henry Davis, who was a druggist's assistant, at Rhyl, in Wales, became possessed of a large sum of money, with which it was intended that he should look out for an eligible opening, and commence business. He left his situation, and, after roaming about a short time, made his way to Chester. There he led a rather dissolute life, and made the acquaintance of a girl, Jemima Morgan. On Sunday, the 27th ultimo, they took a trip to Liverpool, and in the evening again returned to Chester. During their journey from Birkenhead to Chester, Davis took a bottle containing laudanum out of his pocket, and said to Morgan he was determined to poison himself. She took the bottle from him, and emptied the contents out of the carriage window, saying, at the same time, "You never shall, for if you die I'll die also." They went to several public-houses after they returned to Chester, and then returned to their lodgings, in Frodsham-street. During this time Davies frequently talked about poisoning himself. Before returning, Davies wrote a prescription in Latin, and sent a boy to a druggist's shop to fetch what he had written for. Soon after this they retired to their room, when Davies again said he would take poison. Morgan tried to persuade him not to do so; but he still being determined to take it, she agreed to die with him. They then arranged that Davies should pour out Morgan's laudanum, and that she should pour out Davies's. After this had been done Morgan's heart failed her, and she did not muster up sufficient fortitude to take her share for some minutes. Davies, finding that she hesitated, said he would take both her portion and his own. This she would not allow him to do, and, filling up her glass with bitter beer, immediately swallowed the contents, Davies following her example. They then retired to rest, but after the lapse of a quarter of an hour Morgan became alarmed from hearing Davies breathing very heavily. She at once called for assistance, and, it being now between twelve and one o'clock, it was deemed advisable to remove them to the infirmary. Davis, however, was insensible, and, although everything was done to revive him, he died soon after nine o'clock on Monday morning. The laudanum was not so effective upon Morgan, for, after taking an emetic and some stimulants, she gradually recovered. The deceased had written several letters, in one of which he expressed an earnest hope that he and the young woman would be buried together. After these facts had been elicited, Mr. Cartwright, who watched the case for the prosecution, said he considered there was nothing in the evidence to implicate the young woman. The coroner having summed up, the jury, after a few minutes' consultation, found the following verdict:—"We find that the deceased died from taking laudanum while in a sound state of mind, administered by his own hand, and that the prisoner was accessory to the act." On hearing the verdict the prisoner fainted away, and was taken out of the court in that state. She was committed for trial at Chester assizes.

Poisonings.—*By Fungi.*—From our pharmaceutical contemporary we obtain the following particulars of some recent cases of fatal poisoning in France through eating deleterious fungi:—The first is that of a gentleman, M. de Saint Laurent, seventy years of age, who took a fancy to gather, in the brushwood near his dwelling, a great quantity of a very dangerous species of fungus, and which, by a fatal mistake, quite inexplicable in so well informed and intelligent an old man, he regarded as edible. Notwithstanding the objections raised by his cook to these mushrooms on account of their appearance, he had them prepared for his own table, and for that of his servants; he ate freely of them at breakfast, and not experiencing any ill effects from their use, he partook of them again at dinner. Four also of his servants followed the example of their master, and ate sparingly of the same mushrooms. The dangerous, although tardy, effects of the poisonous mushrooms they had partaken of, began to show themselves in the early part of the same night, and M. de Saint Laurent expired the following morning, after having presented the most intense symptoms of acute inflammation, extending throughout the whole length of the intestinal tube, and without his two physicians being able to afford him the least relief. The four servants, all of a robust and vigorous constitution, were also attacked with the same symptoms, and only escaped death through the small quantity of mushrooms they had eaten, their hardy frames, and the energetic means adopted for their recovery. With all these sick persons, the symptoms of poisoning first exhibited themselves from the tenth to the twentieth hour after the mushrooms had been swallowed. The second case was that of three Zouaves of the Imperial Guard in the military hospital of Versailles. It appears that they had all eaten some fungi of a poisonous nature, a species of *Amanita*, and in eighteen hours afterwards were attacked by serious symptoms, and after suffering excruciating agonies during a period of twenty-four hours, they all died.

—*By Cyanide of Potassium.* On Tuesday, October 15th, an inquest was held by the coroner for Westminster, on the body of Mr. John Baker, aged thirty-nine, overseer to Mr. Reilly, gunmaker, Oxford-street. Captain John Burnaby, on the night before the death of the deceased, had been in company with him. He then complained of flatulence, and said he should take a black draught as a remedy. Mrs. Baker, the wife of the deceased, said that after going to bed her husband asked her to go to the safe and fetch him a bottle containing medicine. As soon as he had drunk some of it he said, "My dear, I have taken aquafortis." He called for mustard and water, which he drank, and in the act of going up stairs he fell. Dr. Black and Dr. Grey arrived shortly afterwards, but they had not been long in the house when the unfortunate man died. The post-mortem examination of the body showed that the deceased had suffered from a serious internal complaint. The remainder of the contents of the bottle (from which the draught had been taken) proved, on analysis, to be a weak solution of cyanide of potassium, used to stain gun-barrels. The jury returned a verdict of "Death from taking poison by mistake."—*By Opium.* At an inquest at Sydney Hotel, Goole, on the body of a child, who died from the effects of opium, given by its mother, a woman named Torkington, the wife of a police officer, residing at Stockport, who was on a visit to her mother, Mrs. Scholes, Lower Bridge-street, Goole, the following particulars were elicited:—Mr. R. P. Bell said, I am a surgeon in Goole. About two o'clock on Wednesday morning Mrs. Scholes called me up to attend her daughter. I went at once, and found a young child apparently in a profound sleep. The mother was sitting in a chair in the same room, talking in a wild and wandering way, and was making efforts to vomit. I asked the grandmother what they had been giving to the child, and she replied, "My daughter says she has given them a pennyworth of opium." I at once gave an emetic, but this had no effect. I gave a second, with the like result. I then used the stomach pump, but was still unable to give relief. In passing the tube the child vomited a small quantity of mucus. The child died about seven A.M. There was no possible chance of saving its life. I produce the contents of the stomach, and on examining it I found a strong smell of opium. I found a brown powder secreted among the mucus taken from the stomach. I am sure that powder was poison, and that the child came to its death from an overdose of opium, or some other narcotic poison, such as opium or laudanum. I have tested the contents of the stomach by test paper, and find an acid reaction. I heard that the prisoner had another child, and when it was brought down I saw that it was suffering from the effects of opium. It was then staggering, and in a very nervous state. I gave him an emetic, and one to his mother, and afterwards repeated them, which caused free vomiting. I ordered them some strong coffee, and had them walking about for some time. The boy is now better, and the mother has also recovered from the effects of the opium, but she is in a very unsettled state of mind. The prisoner told me that she had bought a drachm of opium, which cost her 3½*d.*; and that they had all taken it. It was proved that the prisoner said to her mother, "We have all had opium, and shall be dead directly." It was also stated that she had been an inmate of the Stockport Infirmary, and had attempted to hang herself. Mr. William Steele, assistant to Mr. Leggitt, druggist, proved that the prisoner applied to him for ½ oz. of opium, and that he cautioned her several times, and asked if she knew that it was a deadly poison. She said she did, and from her appearance he thought she was in the habit of taking it. The jury returned a verdict of "Wilful murder" against the prisoner. [We refer our readers to one of our leading articles for the particulars of the case of a child named Osborne, to whom a liniment was administered in mistake.—Ed.]

Naphthalized Gas.—The question how far ordinary gas may be increased in illuminating power by making it take up a proportion of naphtha, is one of great economical interest. We take the following extract relating to the subject from a report presented by Dr. Aldis to the Vestry of St. George's, Hanover-square:—"I made experiments during three weeks upon the increase of illuminating power of the naphthalized gas, and the quantity of material consumed. The process consists in passing common gas through a chamber containing naphtha, with which the gas, having come into contact, mechanically combines with the volatile vapours, and produces a greatly increased light. This method is termed naphthalizing gas, for which a patent was taken out by Professor Donovan Oct. 6th, 1830, who applied naphtha to hydrogen, carbonic oxide, and the gases produced by decomposing water by coke. Mr. George Lowe received a patent June 9th, 1832, which has expired, for naphthalizing coal gas, and French patents have been taken out for the same purpose. But the principle of applying naphtha to street lamps, and the mode adopted by the Company, is new in this country. The Company intend to apply the carburator inside the lantern, below the burner, in order to keep an equable temperature. In one experiment, the illuminating power of the common gas when naphthalized was nearly double, and in another it became two and a quarter times greater than the non-carburetted. During a series of experiments on the quantity of naphtha consumed, I found that it varied considerably, but the average amounted to 10·9 grains per cubic feet of gas. Assuming, then, 11 grains of naphtha to be consumed per foot, the quantity burnt annually would be rather more than two gallons, at 3*s.* per gallon. The apparatus is applicable to street lamps, and the preceding experiments show that the brilliancy of inferior gas is increased and the consumption economized by the addition of naphtha. In St. George's

parish the question of cost must be compared with enmel and not with common gas, the parish lamps being supplied with the former."

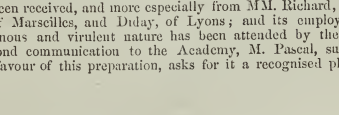
The British Association.—An influential local committee has been formed at Cambridge for the purpose of successfully carrying out the approaching meeting of the British Association for the Advancement of Science at that town next year. The gathering will be held later in the season than usual, and will not take place till the first week in October.

New Metal.—The discovery of a new element, to which the name of dianium has been given, has recently been announced by the celebrated German chemist, Kobell, making, with cæsium, rubidium, and shallium, the fourth simple body added by modern research within a comparatively short space of time.

Extension of Trade.—Mr. F. S. Cleaver, of Honey Soap renown, has established a manufactory in Paris. We trust that his new undertaking may prove successful.

The "Universal Chemist and Druggist," a trashy publication, giving receipts for preparations which have long been banished from pharmacy, has been forwarded to us. As the title is an infringement of our copyright, we have placed the matter in the hands of a lawyer.

The Guaco Plant.—We are indebted to the Paris correspondent of the *Lancet* for the following observations on the uses of this plant:—M. Noël Pascal, a practitioner in the district of the Lower Alps, last year addressed a memoir to the Academy of Medicine relative to the curative effects of the tincture of guaco in the treatment of wounds and ulcerated surfaces. The guaco plant (one of the Synantheræ) is mentioned by Humboldt and Bonpland as being renowned in New Granada as an infallible antidote against snake-bites, the habit in that country being to rub the bruised plant over the bitten part. Since the receipt of M. Pascal's first communication, several confirmations of the value of this tincture have been received, and more especially from MM. Richard, Bauchet, Humbert, Melchin Robert, of Marseilles, and Diday, of Lyons; and its employment for dressing sores of a gangrenous and virulent nature has been attended by the most encouraging results. In a second communication to the Academy, M. Pascal, summing up all the positive results in favour of this preparation, asks for it a recognised place in the Materia Medica of the day.



PHILADELPHIA.

(communicated by E. parrish, principal of the school of practical pharmacy.)

The Industrial Exhibition.—It may be interesting to your readers to know that a Commission has been raised by our government to look after American interests in the World's Fair, to be held in London next spring; and that, notwithstanding the general concentration of energies upon the suppression of the rebellion, and the consequent cessation of commercial intercourse between the northern and southern sections, there is some interest awaking in the great movement originated by your zealous and progressive savants. It can hardly be expected that "The States" will do justice to their real scientific and industrial attainments at a crisis like the present, but I am not without a hope that the display of the American manufacturers will be such as to convince Europe that all is not yet lost in the model republic. As of special interest to Pharmaceutists, I may inform you that at a late meeting of the Philadelphia College of Pharmacy, a resolution was adopted to collect and forward to London, for the Exhibition, a complete cabinet of our indigenous and naturalized medical plants; also specimens of all new and peculiarly American preparations of the forthcoming United States Pharmacopœia, as far as these may be adopted in time for the purpose. A large committee, consisting of the leading members of the College, was charged with the work, and the chief obstacle to its complete success is in the lateness of the season, which will prevent the special collection of many drugs for the purpose; rendering it necessary in some cases to rely on the imperfect specimens already in the hands of herbalists. The progress of the Pharmacopœia revision gives promise of the completion of the work, so as to be published in the spring, perhaps immediately after the London Pharmacopœia is issued from the press.

The Colleges.—Philadelphia is the greatest centre of medical education in America, and is in this as in every other interest, greatly affected by the rebellion. The number of medical students resorting to our colleges has generally reached 1,000 or 1,200 annually, while the aggregate of the present classes does not exceed 700. This is partly owing to the embargo, by which the southern students are prevented from resorting to the northern schools, and partly due to the immense absorption of young men by the army. The loss which the next

generation will sustain by this diversion of the talent of the country from the sciences and arts of peace to those of war, can hardly be estimated. The College of Pharmacy of Philadelphia, has a class of about eighty students this year, which, though somewhat less than usual, is relatively large when compared with those of the medical schools. A change has occurred recently in the organization of the faculty of the New York College of Pharmacy, which promises favourably for its future usefulness. The chair of chemistry, heretofore held jointly with that of a medical college, has now been assumed independently by Mr. F. Mayer, while that of materia medica and pharmacy has devolved on Mr. J. M. Maisch, of Philadelphia; both these professors have the merit of being practical pharmaceutists, thoroughly familiar with the requirements of their position, and bring with them the requisite zeal and industry to carry the work forward efficiently. It is no small evidence of the progress of pharmaceutical education in this country, that while formerly our professorships, even in colleges of pharmacy, were universally held by physicians, there is now abundant material for all our educational requirements in the profession of pharmacy itself.

Kerosolene.—In my last I called attention to a new anæsthetic which has been introduced into notice in this country, under the name of *kerosolene*; a product of the distillation of a peculiar highly bituminous coal. It is perhaps the lightest liquid known, for I find that it has a specific gravity of ·6325, at 72° Fahrenheit. I have recently published a full description of it in the *American Journal of Pharmacy*. It begins to boil at 84° Fahrenheit, the temperature rising to 90°, and afterwards, slowly, without becoming stationary, to 150°; showing that it is a mixed product, consisting of proximate constituents of varying volatility, but all of almost gaseous lightness. It contains benzine, though evidently in small proportion; and its other constituents are evidently carbo-hydrogens, not yet described, and very difficult to isolate or investigate. Its use as an anæsthetic is on the increase, and some of the journals contain favourable accounts of its certainty, safety, and freedom from unpleasant after effects. It is certainly the latest and most notable novelty in its time.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

November 7th, 1861.

Within the last month, the French authorities have commenced the publication of elaborate returns of imports and exports, together with other information especially valuable to the commercial world of Great Britain; and I propose to supply the readers of the *Chemist and Druggist* with that portion of the information which has reference to their business, in as condensed a form as the mass of figures will permit. The imports and exports are given, as they are in the returns of the British government, for the month last completed when the publication appeared—in this case September—and also for the first nine months of the year, in comparison with the quantities for the same periods of the two preceding years. I take the monthly returns, and refer to the other account only when there is any remarkable discrepancy in the results.

The legumes of the Arachis, or Toulouconna nuts, are largely imported for the production of oil, the imports for September last being considerably over 2,200 tons, almost all from the West Coast of Africa. The account, however, shows a falling off during the last two years.

The import of cochineal has, on the other hand, increased from twenty tons, in 1859, to forty-seven tons in September of the present year; and indigo exhibits a still more remarkable increase, the quantity being five times larger than it was in 1859, and more than double that of last year, the imports having amounted, in the month, to seventy-eight tons; it must be noted, however, that, in the case of both articles, about half the quantity was re-exported.

Oleaginous seeds form a very important branch of French commerce, and the quantity consumed is continually on the increase. In the present case we have an import of about 15,000 tons in the month, against 10,000 in former years, and there is no exportation of the article worthy of notice. The import of seed oils does not keep pace with that of the raw material, and the quantity imported is much smaller than it was last year; but olive oil exhibits a marked decline, the imports being less than half what they were in 1860, or 11,620 tons against 24,322.

The consumption of hops grows rapidly; in 1859 the import in September was 53 tons, last year it fell to 37 tons, but this year it has risen to 78 tons; it must be remarked, however, the increase on the nine months is not nearly so great.

Nitrates of potash seem to be rapidly disappearing from the French accounts, the imports having fallen in two years from 164 tons, in the month to almost nothing; the diminution in the case of nitrates of soda is also large, it having dropped from 1,585 to 420 tons. Sulphur follows the same rule, its import having diminished by four-fifths since 1859.

The growth of madder is a very important matter in France, and there is a considerable increase in the export this year, that of the month having been 732 tons, against 436 last year.

The above are the only articles of their class which are of sufficient commercial importance to be specially enumerated in the returns of the Customs.

To the Editor of the Chemist and Druggist.

BUSINESS HOURS OF CHEMISTS.

Plymouth.

Sir,—Much valuable information has constantly been given to the world through your pages on this vexatious question. Now, as I am what may be called a calm observer of what is going on in this part of her Majesty's domain, I do think there ought to be a little effort exerted by way of shortening the oppressive hours of the employed. The hours on week-days are from 7 or 7.30 A.M., till 10.30 or 11 P.M. Some of the employers, whose names I will suppress, are not satisfied with the six days, but keep open as brisk as ever on the Sunday for thirteen or even fifteen hours, retailing hair oil, perfumery, cigars, and various other commodities, having no connection whatever with medicine. Almost as bad a state of things exists at Devonport. Now, sir, this sort of work is, in the highest degree, reprehensible for pharmacists to follow. Of course they think themselves a step above common tradesmen; but I say, if they think so, let their actions indicate their superiority, for "Example is better than precept." Surely something can be done to ameliorate this monstrous evil, and lead the Sunday traders to turn over a fresh leaf. By totally abolishing a great amount of unnecessary labour, we shall benefit ourselves and society at large; and the next generation of pharmacists will for ever be grateful to us.

By inserting this in your next publication, you will greatly oblige,

ZETA.

TASTELESS PILLS.

Edinburgh.

Sir,—In last month's number of the *Chemist and Druggist* there appeared an advertisement, stating that Messrs. Rouse and Company were ready to supply material, apparatus, description, &c., of *their* process for rendering pills tasteless. As I take considerable interest in any novelties that make their appearance, connected with pharmacy, and as the cost of this did not appear, at first sight, to be very great, I wrote to Messrs. Rouse and Co., desiring them to forward what was necessary. Judge of my disappointment and chagrin when, upon examining my purchase, I discovered their (?) process to be one that I, and I believe every other druggist in the kingdom, knew long ago. How Messrs. Rouse and Co. contrive to make the *Tolu* process *theirs* I cannot understand, as it is one that has been tried by so many of the trade already, and found wanting.

I am, &c.,

CRUCIBLE.

NOTES AND QUERIES

SOLUTION OF SILVER FOR ELECTRO-PLATING.—J. L. E. (Jedburgh). To a neutral solution of nitrate of silver add gradually a solution of cyanide of potassium, when a white precipitate of cyanide of silver will fall; continue adding until precipitation ceases. The liquid, which is solution of nitrate of potash, is to be poured off, and the precipitate well washed. This, which is pure cyanide of silver, is now fit to be added to the solvent liquid, which is prepared by dissolving two ounces of cyanide of potassium in a pint of rain or distilled water. By this process a plating solution free from impurities is produced.

SPECTRUM ANALYSIS.—"Pathos" is informed that the prices of the apparatus required range from five to ten guineas. Principal makers: Horne & Thornthwaite, Newgate-street, London.

PHARMACIST.—D. S. asks whether a chemist who is not a member of the Pharmaceutical Society may legitimately style himself a "pharmacist" upon his sign and labels. We believe he may, but we recommend him to obtain counsel's opinion on the question.

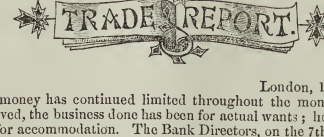
ANALYSIS OF MINERAL SPECIMEN.—"A Country Subscriber." The cost for analysing the ore qualitatively would not exceed one guinea. We can forward you the name and address of an experienced analyst.

SOLDER FOR BRASS INSTRUMENTS.—An alloy of 78·26 parts of brass, 17·41 of zinc, and 4·33 of silver, with the addition of a little chloride of potassium to the borax, is recommended by Mr. Appelbaum, as the best solder for brass tubes, which have to undergo much hammering or drawing after joining.

IRON REDUCED BY GALVANISM.—Daniell's battery reduces iron from a solution of its protochloride as a lead grey deposit, which is very spongy if the evolution of hydrogen is strong; it is then a rather light powder, very soft, extremely ductile, so that it may be converted into plates between the finger-nails.

A. H.—You would certainly be liable to stamp duty for tooth-ache tincture.

We have not been able to obtain the information required by R. W., W. R., K., J. W., "An Enquirer," and others whose queries have not been answered, but we have handed the letters to gentlemen qualified to reply to them.



London, 13th November, 1861.

The demand for money has continued limited throughout the month, and although trade has generally improved, the business done has been for actual wants; hence the trifling amount of money required for accommodation. The Bank Directors, on the 7th instant, again reduced their rate of discount from 3½ to 3 per cent.; and the bankers and brokers in Lombard-street are negociating first-class paper at 2½ to 2¾ per cent. Trade in the manufacturing districts is still very slack, and there appears no indication of things being better this year, the accounts from America still being of a very unsettled character. Consols are now 93⅜ to 93¾ for money, and 92⅞, ex dividend, for the account.

In Chemicals a much better business has been transacted during the month; but generally prices have been in favour of the buyer. Tartaric acid closed quiet at 1/8¾ and 1/8½. More doing in oxalic at 8¼*d.* and 9*d.*, according to quality. Several sales have been made in prussiate of potass at 1/2½ and 1/2⅝, closing dull at these rates. A good business has been done in citric at 1/9. Iodine remains dull at 4¼*d.* and 5*d.* Bichromate is also quiet at 8¾*d.* Chlorate of potass has sold at 10*d.*, and sal acetos 10½*d.* and 11*d.* Extensive sales have been made in cream tartar, at 125/, and 130/ for the finest. Soda crystals are quiet at 87/6, ex ship. Flour of sulphur is steady at 15/. In sulphate of copper, sales of the best have been made at 32/6 and 33/. Linseed oil is firmer; the last sales were effected at 35/3 and 35/6. Turpentine has again advanced, and is now firm at 73/ for American, and 70/ for French. No change in pot or pearl ashes.

The market for Drugs has been quiet, with only moderate sales. Ipecacuanha has advanced to 6/6. Castor oil is steady. Cardamoms are rather down; sales of good Malabar made at 5/. Musk sold at full prices. Some pounds of Jalap sold at 4/8 and 4/9. Oil aniseed is down; sales made at 6/8. Oil cassia advanced to 9/6, but is again lower; sales being made at 9/ and 9/1. Camphor declined to 160/, but re-sales made at 180/; small lots Dutch refined sold at 2/3. Gums are without change. Shellac is 20/ cheaper, and quiet, owing to large arrivals.

PRICE CURRENT.

☞ *These quotations are the latest for* ACTUAL SALES *in Mincing Lane. It will be necessary for our retail subscribers to bear in mind that they cannot, as a rule, purchase at the prices quoted, inasmuch as these are the* CASH PRICES IN BULK. *They will, however, be able to form a tolerably correct idea of what they ought to pay.*

	1861.		1860.	
	s. d. s. d.		s. d. s. d.	
ARGOL, Cape..per cwt.	95 0..105 0		95 0..105 0	
French	60 0..85 0		60 0..85 0	
Oporto, white	0 0.. 0 0		0 0.. 0 0	
red	45 0.. 0 0		50 0..52 0	
Sicily	65 0..80 0		85 0..92 6	
Naples, white	65 0..80 0		85 0..90 0	
red	0 0.. 0 0		0 0.. 0 0	
Florence, white	90 0..100 0		95 0..105 0	
red	85 0..87 6		85 0..95 0	
Bologna, white 115	0..120 0		125 0..130 0	
ARROWROOT, duty 4½*d.* per cwt.				
Bermuda ....per lb.	0 10.. 1 4		1 1.. 1 5	
St. Vincent	0 3.. 0 6		0 2½.. 0 6	
Jamaica	0 2½.. 0 4		0 2¼.. 0 4½	
Other West India ..	0 2.. 0 3½		0 2.. 0 3½	
Brazil	0 1½.. 0 2½		0 1½.. 0 2½	
East India	0 1½.. 0 2½		0 1½.. 0 2½	
Natal	0 2½.. 0 6		0 3.. 0 6½	
Sierra Leone	0 2½.. 0 3		0 2½.. 0 3½	
ASHES, ...per cwt.				
Pot, Canada, 1st sort	30 0..31 0		30 6.. 0 0	
U. S., 1st sort	0 0.. 0 0		0 0.. 0 0	
Pearl, Canada, 1st sort	36 0.. 0 0		31 0.. 0 0	
U. S., 1st sort	0 0.. 0 0		0 0.. 0 0	
BRIMSTONE, rough .....per ton	£7 10.. 0 0		£10 0.. 0 0	
roll	13 10..14 0		14 10.. 0 0	
flour	14 0..14 10		16 10..17 0	
CAPERS, French.....per cwt	£3 0..£5 0		£3 0..£5 0	

	1861.		1860.	
CHEMICALS	s. d. s. d.		s. d. s. d.	
Acid—Acetic, per lb.	0 3½.. 0 4		0 4.. 0 4½	
Citric	1 8½.. 1 9		1 11 .. 0 0	
Nitric	0 3½.. 0 4		0 5.. 0 5½	
Oxalic	0 8½.. 0 9		0 8 .. 0 0	
Sulphuric	0 0¾.. 0 1		0 0¾.. 0 1	
Tartaric, crystal	1 8½.. 0 0		1 10½.. 0 0	
powdered .	1 9 .. 0 0		2 0 .. 0 0	
Alum .....per ton	£6 15 £0 0		£6 15 £7 0	
powder	7 10.. 0 0		8 0.. 0 0	
Ammonia, Carbon, lb.	0s. 5¾d. 0 6d.		0s. 6¾d. 0 6¾	
	£ s. £ s.		£ s. £ s.d	
Sulphate ..per ton	13 10..14 5		13 10..14 10	
Antimony, ore.....	0 0.. 0 0		16 0..17 0	
crude, per cwt..	26s. 0d.28s. 0d		32s. 0d.40s. 0	
regulus	50 0..51 0		53 0..54 6	
French star	48 0.. 0 0		52 0..54 0	
Arsenic, lump	17 6..18 6		17 0.. 0 0	
powder	8 6..10 0		10 6.. 0 0	
Bleaching Powder ..	8 6.. 9 6		10 0..10 6	
Borax, E. I. refined..	0 0.. 0 0		0 0.. 0 0	
British	65 0.. 0 0		65 0.. 0 0	
Brimstone, roll.....	13 10..14 0		14 0.. 0 0	
flour	14 0..14 6		16 10..17 0	
Calomel .....per lb.	2 10.. 0 0		2 10.. 0 0	
Camphor, refined ..	2 3.. 3 0		2 3.. 0 0	
Copperas, green, per tn.	62 0..65 0		65 0.. 0 0	
Cyrsiv. Sublimate, lb.	1 11.. 2 0		2 1.. 0 0	
Green, Emerald, pr lb.	0 9.. 0 11		0 9.. 1 0	
Brunswick, cwt..	14 0..42 0		14 0..42 0	
Iodine, dry ..per oz.	0 4¼.. 0 5		0 5 .. 0 5½	
Ivory Blk, drop pr. ct.	8 0.. 9 0		0 0.. 0 0	

PRICE CURRENT—*continued.*

CHEMICALS.	1861. s. d.	s. d.	1860. s. d.	s. d.
Magnesia, Carbon. ct.	42 6..45	0	42 6..45	0
Calcined, lb.....	1 6.. 1	6	1 6.. 1	6
Minium, red, per cwt.	32 6..28	0	32 6..24	0
orange	35 0.. 0	0	36 0.. 0	0
Potash, Bichrom., lb.	0 9.. 0	0	0 10½.. 0	10½
Chiorate.....	0 10.. 0	10½	0 10½.. 0	11
Hydrodate ..oz.	0 5.. 0	5½	0 5½.. 0	6
Prussiate ....lb.	1 0½ 1	1	1 3.. 0	0
red..	2 2.. 0	1	2 3.. 0	0
Precipitate, red per lb.	2 9.. 2	10	2 10.. 2	11
white....	2 10.. 0	0	2 10.. 0	0
Prussian Blue	1 6.. 1	10	1 6.. 1	10
Rose Pink ..per cwt.	29 0..30	0	29 0..30	0
Sal-Acetos ....per lb.	0 10½.. 0	11	0 10 .. 0	0
Ammoniac, cwt.				
British ..	32 6..33	0	32 0..33	6
Epsom	8 0.. 0	0	8 3.. 8	6
Gum Arabic	5 0.. 9	5	5 5.. 5	6
Saltpetre, refined...	36 6..38	0	43 8..44	6
Soda, Ash, per degree	0 2½.. 0	2⅝	0 2½.. 0	2⅝
Bicarbonate ...cwt.	12 0..13	0	14 6.. 0	0
Crystals....per ton	£4 15s/..£0	0	£4 15s/..£0	0
Sugar Lead, white, ct.	37s. 0d.38s.	0d	38.0d.39s.	0d
brown.....	27 6..28	0	28 0.. 0	0
Sulphate Quinine, oz.				
British in bottle ..	6 9.. 7	0	8 2.. 8	6
Foreign	6 4.. 0	0	7 0.. 7	6
Sulphate Zinc ....cwt.	14 6..15	0	14 6..15	0
Verdigris .....lb.	1 3.. 1	5	1 3.. 1	5
Vermillion, English..	3 0.. 3	4	3 0.. 3	4
China....	2 0.. 2	3	3 1.. 3	2
Vitriol, blue or Roman				
per cwt....	32 6..33	0	34 6..35	0
CHICORY....per cwt.				
Foreign (duty, 6s.) ..	17 6..18	0	13 0..13	6
COCHINEAL...per lb.				
Honduras, black....	2 10.. 4	8	3 0.. 5	2
silver	3 4.. 3	6	3 6.. 3	6
pasty	1 6.. 2	3	2 0.. 2	10
Mexican, black.....	2 6.. 3	0	3 2.. 3	9
silver.....	2 3.. 2	6	2 10.. 3	1
Lima	2 6.. 3	2	3 0.. 3	9
Teneriffe, black	3 8.. 3	1	3 4.. 4	3
silver	2 7.. 2	9	3 1.. 3	3
COCOA (duty 1d. per lb.)				
Trinidad, red, in bond.....per cwt	66 0 105	0	70 0..92	0
gray	66 0..66	0	70 0..68	0
Grenada.....	58 0..65	0	60 0..67	0
Dominica & St. Lucia	56 0..62	0	58 0..62	0
Para	63 0..66	0	64 0..66	0
Bahia	55 0..57	0	56 0..57	0
Guayaquil	64 0..65	0	68 0..70	0
COFFEE, in bond (duty 3d. per lb.)				
Jamaica, good, mid. to f....	80 0..100	0	73 0..96	0
low mid. & mid.	74 0..78	0	75 0..70	0
fine ordinary ..	68 0..72	0	62 0..64	0
good ordinary ..	66 0..67	0	59 0..61	0
ord. and triage..	50 0..65	0	46 0..59	0
Ceylon, Nat. gd. & f.	68 0..71	0	61 0..64	6
ordinary	63 0..67	0	57 0..61	0
Plantation, fine..	86 0..90	0	86 0..90	0
fine mid.	82 0..85	0	79 0..85	0
good mid.....	79 0..81	0	75 0..78	0
middling	75 0..78	6	70 0..74	0
fi.ord, to low mid.	70 0..74	0	66 0..69	0
mixed and triage	50 0..70	0	50 0..65	6
Malabar and Mysore	68 0..90	0	57 0..78	0
Madras	68 0..80	0	58 0..70	0
Tellicherry	70 0 100	0	64 0..89	0
Mocha, fine	120 0 135	0	112 0 123	0
garbled	93 0 105	0	94 0 110	0
ungarbled	68 0..100	0	62 0..86	0
Batavia, yellow	74 0..78	0	65 0..78	0
pale and mixed..	66 0..73	0	56 0..64	0
Sumatra.....	58 0..64	0	50 0..55	0
Padang	60 0..66	0	54 0..58	0
African	70 0..85	0	80 0..85	0
Brazil, f. ord. & wshd.	63 0..72	0	60 0..73	0
good ord.	56 0..62	0	57 0..61	0
ordinary	47 0..54	0	51 0..57	0

COFFEE.	1861. s. d.	s. d.	1860. s. d.	s. d.
La Guayra	70 0..78	0	62 0..78	0
Costa Rica, mid. to f.	70 0..87	0	68 0..82	0
good and f. ord.	67 0..69	0	62 0..68	0
Cuba, mid. to fine ..	72 0..85	0	68 0..82	0
f. ord. & f. f. ord.	67 0..70	0	62 0..68	0
ord. & good ord.	64 0..67	0	57 0..62	0
Porto Rico	66 0..78	0	60 0..78	0
St. Domingo.....	60 0..69	0	58 0..65	0
DRUGS,	£. s. £.	s.	£. s. £.	s.
Aloes, Hepatic, pr.cwt.	5 10.. 8	0	3 10.. 9	10
Socotrine	8 0..24	0	5 10..24	10
Cape, good.....	2 0.. 2	3	2 0.. 2	8
inferior ..	1 0.. 1	16	1 8.. 2	0
Barbadoes	3 0..21	0	2 0..23	10
Ambergris, gray, p.oz.	35s. 0d. 38s.	0d.	35s. 0d. 42s.	0d.
Angelica Root, pr.cwt.	20 0..35	0	35 0..42	0
Aniseed, China star..	65 0..70	0	72 0..80	0
German, &c	22 0..42	0	32 0 42	6
Balsam, Canada, pr.lb.	1 4.. 0	0	1 3.. 0	0
Capivi	1 8.. 1	9	1 11.. 2	0½
Peru.....	4 7.. 4	8	4 10.. 0	0
Tolu.....	3 4.. 3	7	3 4.. 3	9
Bark, Cascarilla, cwt.	25 0..49	0	25 0..49	0
Peru.crwn.&gry.pr.lb.	1 2.. 2	6	1 7.. 3	2
Calisaya, flat ..	3 6.. 3	9	5 3.. 5	6
quill..	3 4.. 3	6	5 0.. 5	3
Carthagena	0 10.. 2	0	1 2.. 2	0
Pitayo	1 6.. 2	2	1 6.. 2	3
Red	2 0.. 6	0	2 2.. 6	0
Bay Berries, per cwt,	22 0..40	0	22 0..40	0
Borax.....	18 0..50	0	20 0..37	6
Tincal	20 0..50	0	30 0..60	0
Bucca Leaves ....lb.	0 3.. 0	6	0 5.. 1	2
Burgundy Pitch, p.cwt.	0 0.. 0	0	0 0.. 0	0
Camomile Flowers..	40 0..90	0	110 0 160	0
Camphor, China....	160 0 170	0	170 0 175	0
Canella Alba.....	18 0..40	0	25 0..40	0
Cantharides ..per lb.	2 1.. 2	2	2 9.. 2	10
Cardamms. Mlbr. good	4 10.. 5	1	4 7.. 4	8
inferior ..	3 10.. 4	9	4 2.. 4	6
Madras ..	3 4.. 4	9	2 10.. 4	4
Ceylon	3 0.. 4	9	3 6.. 3	9
Cassia Fistula, pr.cwt.	13 0..23	0	28 0..38	0
Castor Oil, 1st pale, lb.	0 6½ 0	6¾	0 6.. 0	6¾
second	0 5½ 0	6	0 5½ 0	5¾
infr. and dark	0 4½ 0	5½	0 5.. 0	5½
Bombay, in casks	0 4½ 0	5	0 3½ 0	4
Casturum	1 2..28	0	5 0..20	0
China Root..per cwt.	9 0..10	0	9 0..10	0
Coculus Indicus	15 0..15	6	15 0..16	0
Cod-liver Oil, per gal.	5 0.. 6	6	4 9.. 6	9
Colocynth, apple, p.lb.	0 8.. 1	2	0 11.. 1	4
Colombo Root, per wt.	15 0..17	6	10 0..40	0
Corosus Nuts, per cwt.	13 0..23	6	15 0..27	6
Cream Tartar, per cwt.				
French 122	6 125	0	137 6 140	0
Venetian	125 0 130	0	142 6.. 0	0
gray	115 0 120	0	125 0 127	6
brown.....	105 0 110	0	118 0 120	0
Croton Seed.....	90 0 105	0	75 0..90	0
Cubebs	140 0.. 0	0	210 0 220	0
Cummin Seed	38 0..42	0	30 0..32	0
Dividivi.....	13 0..14	0	12 0..13	0
Dragon's blood, reed.	£8 0 £12	0	£7 0 £14	0
lump	3 10..10	0	5 5..13	0
Galangal Root.....	0 16..20	0	1 6.. 1	8
Gentian Root	0 15.. 0	17	0 16.. 0	17
Ginger, preserved, in bd.	5 6.. 5	6	5 6.. 5	6
(duty 2d. lb.) per lb.	0 4.. 0	7	0 9.. 0	9½
Guinea Grains,				
per cwt.	50 0..52	6	57 0..57	0
Honey, Narbonne ..	60 0..85	0	70 0..95	0
Cuba	25 0..36	0	48 0..56	0
Jamaica	30 0..80	0	48 0..75	0
Ipecacuanha, per lb..	6 6.. 0	0	4 6.. 4	8
Isinglass—				
Brazil.....	1 0.. 3	10	1 10.. 4	3
East India	0 9.. 3	0	1 10.. 4	2
West India	3 0.. 3	6	3 9.. 4	2
Russian, long staple	12 0..13	0	0 0.. 0	0
leaf.....	9 6..12	0	0 0.. 0	0
Simovia..	2 3.. 2	6	1 6.. 2	6
Jalap	4 6.. 4	9	4 6.. 5	0

PRICE CURRENT—*continued.*

DRUGS.	1861. s. d. s. d.	1869. s. d. s. d.
Juniper Berries, p. cwt.		
German and French	10 0..11 0	9 0.. 9 6
Italian	10 0..12 0	9 0..10 0
Lemon Juice, per deg.	0 3.. 0 1	0 0.. 0 0
Lichen Islandicus, lb.	0 0.. 0 0	0 0.. 0 0
Liquorice... per cwt.		
Spanish	83 0..90 0	83 0..90 0
Italian	85 0..95 0	90 0.. 95 0
Macaroni, Genoa, p.lb.	0 3.. 0 6	0 3.. 0 6
Naples	0 4.. 0 5½	0 4.. 0 5½
Manna, flaky	2 6.. 3 0	4 0.. 4 9
small	1 6.. 2 0	2 0.. 2 3
Musk ... per oz.	29 0..34 0	28 0..36 0
Myrabolans, per cwt.	8 6..12 0	9 6..13 6
Nux Vomica	8 0.. 8 6	11 6..13 0
Opium, Turkey	14 0..16 0	16 6..18 6
Egyptain	6 0..13 0	6 0..13 6
Orris Root.. per cwt.	28 0..29 6	28 0..31 0
Pellitory Root	0 0.. 0 0	0 0.. 0 0
Pink Root... per lb.	1 10.. 2 2	1 0.. 1 3
Quassia (bit. wd.) ton	£3 5.. £4 0	£3 5.. £5 0
Rhatania Root .p lb.	0s. 10d..1s. 0d	0s. 6d.. 1s. 2d
Rhubarb, China, rnd.	0 9.. 2 9	1 0.. 2 9
flat..	1 0.. 2 9	1 2.. 3 0
Dutch, trimd.	3 0.. 3 6	3 3.. 3 6
Russian	11 6.. 0 0	13 6..14 6
Saffron, Spanish	54 0..58 0	54 0..56 0
Salep.....per cwt.	£9 0s. £9 10	£10 0 £14 0
Sarsaparilla, Lima..	0s. 11d.. 1s. 4d	0s. 10d.. 1s. 2d
Para	0 10.. 1 3	0 10.. 1 2
Honduras	0 11.. 1 6	0 11.. 1 6
Jamaica	1 3.. 2 3	1 3.. 2 6
Sassafras...per cwt.	10 0..13 0	10 0..12 0
Scammony .. per lb.		
virgin	28 0..35 0	28 0..34 0
second	14 0..24 0	14 0..24 0
Seedlac	60 0 100 0	48 0..70 0
Seneka Root	2 2.. 2 6	2 2.. 2 0
Senna, Calcutta	0 1½.. 0 2½	0 2½.. 0 2½
Bombay	0 1½ 0 3	0 2½.. 0 4
Tinnevelly	0 2 .. 0 11½	0 3.. 0 8½
Alexandria	0 4.. 0 6½	0 5.. 0 7
Shellac, orange, pr.ct.	180 0 190 0	235 0..252 6
liver & garnet.	170 0..180 0	210 0..230 0
block	130 0 150 0	215 0..225 0
bttn.dk.to mid.	110 0 120 0	205 0..210 0
good and fine.	145 0 170 0	215 0..225 0
Snake Root	1 8.. 1 9	1 2.. 1 3
Spermaceti, refined..	1 0.. 1 1	1 6.. 0 0
Squills	0 1.. 0 0	0 1½ 0 3
Sticklac	0 0..120 0	60 0..90 0
Tamarinds, E. India.	10 0..12 0	7 6..12 0
W.I. per cwt.	15 0..32 0	16 0..35 0
Terra Japonica,		
Gambier.. per cwt.	17 6..18 0	17 3..17 9
Cutch	24 0..25 0	25 0..26 0
Valerian Root, Engl.	20 0..40 0	20 0..40 0
Vanilla,		
Mexican .. per lb.	20 0..50 0	35 0..75 0
Brazil	0 0.. 0 0	0 0.. 0 0
Wormseed ..per cwt.	2 0..19 0	1 0.. 0 0
FARINA, Scotch	20 0..25 0	16 0..16 6
GUM ..... per cwt.	£. s. £. s.	£. s. £. s.
Ammoniac, drop	3 10.. 5 5	2 15.. 5 0
lump	0 15.. 2 0	0 15.. 2 0
Animi, fine pale	15 0..16 0	15 10..16 0
bold amber	13 0..14 0	13 0..15 0
medium	8 10..11 0	8 10..11 10
small & dark	5 0.. 8 5	5 0.. 8 0
ordinary dark	2 10.. 5 0	2 10.. 5 0
Arabic, E.I.f.palepicked	2 10.. 2 17	2 13.. 3 3
unsorted, good to f.	1 18.. 2 10	1 18.. 2 10
red and mixed	1 5.. 1 16	1 8.. 1 16
siftings	0 0.. 0 0	0 18.. 1 3
Turkey, pkd. gd. to fi.	5 5.. 7 5	5 10.. 7 10
second & infr.	2 0.. 5 0	2 5.. 5 5
in sorts	1 10.. 2 0	1 10.. 2 3
Gedda	1 4.. 1 6	1 4.. 1 7
Barbary, white	1 10.. 1 13	1 10.. 1 12
brown	1 7.. 1 8	1 10.. 1 11
Cape	0 16.. 0 18	0 16.. 0 18
Assafœtida, fair to gd.	1 10.. 5 0	1 0.. 4 5
Benjamin, first qual.	20 0..33 0	18 0..34 0

GUM.	1861. £. s. £. s.	1869. £. s. £. s.
Benjamin, 2nd qual.	14 0..20 10	8 0..16 10
3rd ,,	2 10.. 9 10	3 0.. 7 10
Copal, Angola red	5 0.. 6 5	4 10.. 5 0
pale..	4 15.. 5 5	4 0.. 4 15
Benguela	5 0.. 7 0	4 10.. 5 5
Sierra Leone lb.	0s. 7d. 1s. 9d	0s. 9d. 1s. 9d
Manilla, pr.ct.	12 0..40 0	15 0..43 0
Dammar, pale, pr. ct.	40 0..48 0	46 0..48 0
	£. s. £. s.	£. s. £. s.
Galbanum	7 0.. 8 0	7 0.. 9 0
Gamboge, pkd. pipe	7 0.. 9 0	6 0.. 7 10
in sorts	4 0.. 6 0	4 10.. 5 10
	s. d. s. d.	s. d. s. d.
Guaiacum ....per lb.	0 7.. 1 6	0 10.. 1 9
Kino ..... per cwt	100 0 140 0	95 0..120 0
Kowrie	16 0.. 20 0	20 0..26 6
Mastic, pkd., per lb.	6 6.. 7 6	8 6.. 9 6
Myrrh, gd. & fi., pr ct.	140 0 180 0	160 0 200 0
sorts	80 0 130 0	90 0 150 0
Olibanum, pale drop.	60 0..60 0	60 0..68 0
amber & yellow	40 0..54 0	40 0..54 0
mixed & dark	10 0..36 0	20 0..40 0
Senegal	40 0..46 0	28 0..33 0
Sandrac	75 0 100 0	90 0 115 0
Tragacanth, leaf	180 0 340 0	190 0 340 0
in sorts	100 0 130 0	100 0 126 0
LAC DYE, per lb. D.T.	1 2.. 1 10	1 10½.. 1 11
B Mirzapore	1 6.. 1 7	1 7.. 1 8
Other good and fine	1 0.. 2 5	1 2.. 2 3
Ord. & Native marks	0 1½.. 0 10	0 2 .. 0 11
OILS.....per tun	£. s. £. s.	£. s. £. s.
Seal, pale	40 0..41 0	38 0.. 0 0
yellow	36 0..38 0	32 10..34 0
brown	33 0 .. 0 0	31 0..32 0
Sperm, body	88 0.. 90 0	102 0 103 0
headmatter	90 0.. 0 0	102 0 104 0
Cod	35 0..35 10	35 0.. 0 0
Whale, Greenland	0 0.. 0 0	0 0.. 0 0
South Sea, pale	35 0..36 0	33 0.. 0 0
yellow	34 10.. 0 0	33 0.. 0 0
brown	34 0..32 0	31 0.. 0 0
E. I. Fish	30 10..32 10	28 0..28 10
Olive, Galipoli ...tun	61 0..62 0	60 0.. 0 0
Trieste	0 0.. 0 0	60 0.. 0 0
Levant	57 0..58 0	56 0..57 0
Mogadore	57 10.. 0 0	55 10.. 0 0
Spanish	59 0..60 0	60 0.. 0 0
Sicily	57 10..58 0	57 0..58 10
Florence, pr. ½-chst.	1 0.. 1 2	0 16.. 0 0
Cocoanut, Cochin, tun	50 0..51 0	53 0..54 10
Ceylon	49 0 .. 50 0	51 10..52 0
Sydney	40 0..49 6	47 0..51 10
Ground Nut and Gin.		
Bombay	41 15..42 10	41 0.. 0 0
Madras	44 0..45 0	43 0..44 0
Palm, fine	46 0..46 0	47 0..47 10
Palm Nut	39 0..43 0	40 0.. 0 0
Linseed	35 3 35 6	30 10.. 0 0
Rapeseed, Engl. pale	46 0.. 0 0	43 10 44 0
brown	43 0.. 0 0	41 0..41 10
Foreign do.	46 10..47 10	45 0..46 0
brown	43 0..43 10	42 10..43 0
Lard	54 0.. 0 0	62 0..63 0
Tallow	40 0.. 0 0	32 0.. 0 0
Rosin	0 0.. 0 0	7 5.. 0 0
OILS, Essential;	s. d. s. d.	s. d. s. d.
Almond, essen. pr. lb.	10 0.. 0 0	30 0..31 0
expressed..	0 0.. 0 0	1 0.. 0 0
Aniseed	6 8.. 6 9	7 7.. 0 0
Bay	per cwt. 0 0.. 0 0	122 6.. 0 0
Bergamott	per lb. 6 6..14 0	6 6..14 0
Cajeputa, bond, pr.oz.	0 1½.. 0 1½	0 1.. 0 1½
Carnway	per lb. 3 3.. 0 0	3 3.. 0 0
Cassia	9 0.. 9 1	11 3..11 6
Cinnamon (inb.) p.oz.	1 0.. 3 10	3 0.. 4 3
Cinnamon Leaf	0 2.. 0 4	0 1.. 0 2½
Citronel	0 4.. 0 0	0 4½.. 0 4½
Clove	0 4.. 0 0	0 2½.. 0 3½
Croton	0 3.. 0 4	0 4½.. 0 4½
Juniper per lb.	1 10.. 1 11	1 10.. 4 0
Lavender	2 6.. 5 0	2 6.. 5 0
Lemon	0 5..10 6	0 5..10 0
Lemongrass..per oz.	0 5½.. 0 5½	0 5 .. 0 6½

PRICE CURRENT—*continued.*

	1861.			1860.		
	s.	*d.*	*s. d.*	*s.*	*d.*	*s. d.*
OILS, Essential,						
Mace, ex	0	1¼	.. 0 2	0	1¼	.. 0 2
Neroli.....	6	0	.. 9 0	6	0	..10 0
Nutmeg	0	1¼	.. 0 2	0	2	.. 0 2½
Orange .....per lb.	6	6	.. 7 0	10	2	..11 0
Otto Roses ..per oz.	16	0	.. 25 0	16	0	..26 0
Peppermint ..per lb.						
American	7	6	..14 0	7	6	..15 6
English	33	0	..38 0	24	6	..30 0
Rhodium ....per oz.	3	9	.. 6 0	3	9	.. 6 0
Rosemary ....per lb.	1	10	.. 3 0	1	10	.. 3 0
Sassafras	3	6	.. 4 6	3	0	.. 3 6
Spearmint.....	5	0	..12 6	5	0	..12 6
Spike	1	3	.. 1 6	1	3	.. 1 6
Thyme	1	9	.. 2 6	1	9	.. 2 9
PITCH, British, pr. cwt.	6	6	.. 7 0	6	0	.. 6 3
Swedish	10	6	.. 0 0	10	3	.. 0 0
SALTPETRE, per cwt.						
Bengal, 6 p.c. or under	35	0	..35 6	42	6	..43 6
over 6 per cent.	33	0	..34 0	39	0	..42 0
Madras	32	0	..33 0	38	6	..42 0
Bombay	30	6	..34 6	37	6	..40 0
British-refined.....	33	6	..39 0	43	6	..45 6
Nitrate of Soda	13	6	.. 14 0	13	0	..13 6
SEED, Canary ...p. qr.	0	0	.. 0 0	52	0	..64 0
Caraway, English, p.c.	23	0	..25 0	28	0	..30 0
German, &c.	0	0	.. 0 0	26	0	..34 0
Clover, English, red..	0	0	.. 0 0	0	0	.. 0 0
white..	0	0	.. 0 0	0	0	.. 0 0
Germ.& French, red	0	0	.. 0 0	0	0	.. 0 0
white..	0	0	.. 0 0	0	0	.. 0 0
Coriander	15	0	..17 0	0	0	.. 0 0
East India	0	0	.. 0 0	0	0	..13 0
Hemp	44	0	..46 0	44	0	..46 0
Linseed, English, p. qr.	60	0	..61 0	70	0	..75 0
Black Sea and Azof	60	0	.. 0 0	55	0	..56 0
Calcutta	62	0	..64 0	59	0	..60 0
Bombay	66	0	..67 0	61	6	.. 0 0
Egyptian	54	0	..61 0	54	0	..55 0
St. Pirsbg..Morshnk	57	0	..61 6	55	0	..56 0
Archangel	56	0	..58 0	48	0	.. 0 0
Riga	49	0	..55 0	44	0	..45 0
Mustard, brown, p. bhl	8	0	..13 0	0	0	.. 0 0
White	9	0	..10 0	9	0	..11 0
Niger	50	0	..51 0	48	0	..49 0
Poppy, E.I. ..per qr.	59	6	..60 0	58	0	.. 0 0
Rape, English	0	0	.. 0 0	0	0	.. 0 0
Danube	69	0	..70 0	63	0	.. 0 0
Calcutta, fine....	63	0	..64 0	59	0	.. 0 0
Bombay, Guzerat	68	0	..71 0	67	0	.. 69 0
Peroze. & Scinde	64	0	..66 0	55	0	..60 0
Teel, Sesame or Gnzly.	64	0	..70 0	56	0	..64 0
Cotton ..... per ton	7	10	.. 8 0	0	0	.. 7 10
Gnd. nut Kernels. to 340	0	0	..345 0	320	0	..330 0
SOAP, Lond. yel. p.cwt.	21	0	..36 0	21	0	..38 0
mottled	34	0	..36 0	36	0	..38 6
curd	50	0	.. 0 0	52	0	.. 0 0
Castile.....	38	0	..40 0	37	0	..40 0
Marseilles	40	0	..41 0	40	0	.. 41 0
SOY, China ..(per gal.)	2	0	.. 2 2	4	0	.. 4 1
Japan	0	8	.. 0 10	1	6	.. 2 0
SPICES, duty free, except pepper,						
Cassia Lignea, p. cwt.	84	0	..93 0	85	0	.. 95 0
Vera	13	0	..50 0	12	0	..53 0
Buds	190	0	.. 0 0	196	0	.. 0 0
Cinnamon, per lb.						
Ceylon, 1st quality.	1	5	.. 2 9	1	4	.. 2 3
2nd ditto ..	1	2	.. 1 10	1	0	.. 1 8
3rd ditto ..	0	9	.. 1 4	0	9	.. 1 2
Tellicherry	0	10	.. 1 0	0	9	.. 1 0
Cloves, Penang	1	1¼	.. 1 3	1	0	.. 1 4½
Amboyna	0	4½	0 5½	0	4½	.. 0 4½
Zanzibar	0	3½	0 3½	0	3½	.. 0 4
Ginger	£	*s.*	*£ s.*	£	*s.*	*£ s.*
Jamaica, fine pr. cwt.	7	0	.. 9 10	7	0	.. 9 10
ord. to good	2	10	.. 6 10	3	1	.. 6 0
African	48	s. 0	d.. 0s. 0d.	35	s. 0	d. 35 s. 0 d.
Bengal	0	0	.. 0 0	25	0	.. 26 0
Malabar	0	0	.. 0 0	33	0	.. 34 0
Cochin	48	0	.. 0 105	0	40	.. 0 98
Mace, 1st qlty lb.....	1	2	.. 1 4	1	7	.. 2 2
2nd. & infr....	0	8	.. 1 0	0	10	.. 1 6
Nutmegs per lb.						
brown Penang, &c.	0	10	.. 4 0	1	2	.. 4 0
limed	0	10	.. 2 0	1	2	.. 2 4

	1861.			1860.		
	s.	*d.*	*s. d.*	*s.*	*d.*	*s. d.*
SPICES,						
Pepper (duty 6d. pr. lb.)						
Black, in bond						
Malabar	0	4½	.. 0 5½	0	4½	0 5½
Aleppee	0	4½	.. 0 4½	0	4½	0 4½
Penang & Batavia	0	3½	.. 0 4	0	3½	.. 0 4½
Singapore	0	3½	.. 0 4¼	0	4	.. 0 4½
White, Tellicherry.	0	10	.. 1 5	0	9½	1 0½
Other sorts.....	0	6	.. 0 6½	0	6	.. 0 6¾
Cayenne.....	1	1	.. 1 6	0	10	.. 1 4
Pod, S. Leone pr. c.	27	0	..32 0	28	0	..33 0
Zanzibar	80	0	..92 0	70	0	..81 0
Long	32	0	..34 0	36	0	..40 0
Pimento, mid. to good	0	3	.. 0 3½	0	3½	.. 0 3¾
ordinary.....	0	2½	.. 0 2½	0	3	.. 0 0
SPONGE, Turk. f. pkd.	20	0	..24 0	20	0	..26 0
fair to good	9	0	..18 0	9	0	..18 0
ordinary ..	3	0	.. 6 0	3	0	.. 8 0
Bahama ..	0	4	.. 1 3	0	3	.. 1 0
TEA (duty 1s. 5d. per lb.) in bond.						
Congou, ordinary ...	0	7	.. 0 8	1	0	.. 1 1
good ordinary	0	9	.. 0 10½	1	2	.. 1 2½
but middling.	0	11	.. 1 0	1	3	.. 1 4
blackish leaf	1	1	.. 1 4	1	4	.. 1 6
ditto strong	1	6	.. 1 10	1	7	.. 1 10
ditto to extra fine..	2	0	.. 2 8	2	0	.. 2 1
Ning Yong and Oolong	0	10	.. 2 0	1	3	.. 2 0
Souchong, ordinary..	0	10	.. 1 0	1	1	.. 1 4
fair to fine	1	2	.. 1 8	1	5	.. 1 10
finest	2	0	.. 2 6	2	0	.. 2 6
Flowry Pekoe, ordinary	1	3	.. 1 6	0	0	.. 0 0
fair to good	1	6½	.. 2 0	1	6	.. 2 3
fine to finest	2	0	.. 4 0	2	6	.. 3 1
Caper, scented, in bxs.	0	9	.. 2 1	0	10½	.. 2 2
Orange Pekoe, plain..	0	9	.. 0 10	0	10	.. 1 4
scented	0	11	.. 2 3	1	2	.. 2 3
Twankay, ordy. Canton	0	0	.. 0 0	0	8	.. 0 0
common to good..	1	2	.. 1 6	0	10	.. 1 2
fine to Hyson kind.	1	5	.. 1 10	1	3	.. 1 4
Hyson Skin, common	1	2	.. 1 4	0	8	.. 0 10
good to fine	1	5	.. 1 7	0	11	.. 1 1
Hyson, ordy. to comn.	1	10	.. 2 6	1	4	.. 1
fair to fine.....	2	2	.. 2 8	1	8	.. 2 6
finest	2	9	.. 3 6	2	9	.. 3 6
Young Hys. Boh. kind	0	0	.. 0 0	0	9	.. 0 10
good to fine	1	9	.. 2 8	0	11	.. 2 3
Imperial	1	10	.. 2 10	1	0	.. 2 2
Gunpowder	0	10½	4 0	0	11	.. 3 9
Assam	1	2	.. 4 6	1	7	.. 4 6
TURPENTINE,						
Rough..... per cwt.	22	0	..24 0	11	0	..11 6
Spirits, English	71	0	.. 0 0	33	6	.. 0 0
American, in casks	73	0	.. 0 0	34	6	.. 0 0
WAX, Bees, English ..	£8	0	.. £8 10	£8	5	.. £8 10
German	8	0	.. 8 15	8	0	.. 8 5
American	9	0	..10 0	8	10	..10 0
white fine	10	0	..10 10	10	0	..10 15
Jamaica.....	8	10	.. 9 10	8	15	.. 9 0
Gambia	9	0	.. 0 0	9	0	.. 9 10
Mogadore	6	10	.. 8 0	6	0	.. 7 10
East India.....	7	10	.. 8 10	8	0	.. 9 0
ditto, bleached....	9	0	..10 10	9	0	..10 10
vegetable, Japan....	2	14	.. 3 10	3	0	.. 3 5
WOOD, Dyeing, bar, pr. tn.	3	0	.. 0 0	3	0	.. 0 0
Brazil. first quality	70	0	..78 0	70	0	.. 80 0
second quality..	55	0	..60 0	55	0	..60 0
logs.....	15	0	..18 0	20	0	..25 0
Braziletto	4	0	.. 5 10	4	0	.. 5 10
Camwood	20	0	.. 0 0	24	0	.. 0 0
Ebony, Green	7	0	.. 8 10	9	10	..10 0
Fustic, Cuba	8	0	.. 9 0	8	15	.. 9 0
Jamaica.....	5	15	.. 6 5	5	0	.. 5 15
Savanilla	5	0	.. 5 10	5	0	.. 0 0
Zante	7	0	.. 9 0	0	0	.. 8 0
Logwood, Campeachy	9	0	.. 9 10	6	10	.. 6 15
Honduras	6	0	.. 6 5	0	0	.. 0 0
St. Domingo.....	5	15	.. 6 0	5	0	.. 5 10
Jamaica	5	5	.. 5 10	4	10	.. 4 15
Nicaragua, lar. & sol.	8	10	.. 0 0	11	0	..12 10
small	7	10	.. 0 0	0	0	.. 0 0
Lima, first pile	8	0	.. 9 0	12	10	..13 5
second pile ..	7	0	.. 7 15	11	10	..12 0
Red Sanders.....	6	5	.. 0 0	5	15	.. 5 17
Sapan, Bimas	7	0	.. 8 10	6	0	.. 6 10
Siam, &c.....	7	10	.. 9 0	6	0	.. 9 10

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LETTERS PATENT.

DRUGS, CHEMICALS, ETC.

335 Leidemann, A., and Langè, T., Newcastle-on Tyne, the manufacture of sub or oxi-sulphate of lead.

383 Prenslan, M. A., Liverpool, improved preparations for the cure and prevention of toothache, and the preservation of teeth.

408 Clark, W., Chancery-lane, improvements in the preparation of alkaline and earthy cyanides.

537 Stevens, C., Charing-cross, an ointment for the cure of sores.

769 Willans, J. G., Belfast, improvements in the preparation of hydrated oxide of iron, and the application of such prepared oxide for the absorption or separation of sulphur from certain gases.

INDIA RUBBER AND GUTTA PERCHA.

446 Truman, E. T., Old Burlington-street, improvements in masticators or machines employed in the mastication of gutta percha, india rubber, and other similar substances.

MISCELLANEOUS.

306 Gee, T., Nottingham, the production of a new composition or compositions of which refuse leather is the chief ingredient, and manufacturing therefrom articles of utility, plain or ornamented.

378 Rimmel, E., Strand, a new process for impregnating the atmosphere with perfuming or purifying vapours.

424 Richardson, T., Newcastle-upon-Tyne, improvements in the manufacture of manure.

439 Lang, B., Snow-hill, improvements in apparatus for feeding infants and invalids.

486 Young, J., Limefield, N.B., improvements in apparatus for the treatment or distillation of bituminous substances.

490 Davies, G., Serle-street, improvements in mechanical beds for invalids, applicable also to tables for anatomical or surgical operations.

690 Wilson, G., York, improvements in glass stoppers applicable to feeding bottles, retorts, and other vessels.

733 Loyer, G. J. B., Brixton, irrigating or self-supplying water brushes, brooms, and sponges.

937 Jenkins, W., Brompton, improvements in medicated belts, or bands, for the alleviation of pain in, or prevention of cholera, and for the prevention or cure of pulmonary or other complaints.

1426 Baker, G., Birmingham, a new or improved instrument or apparatus for churning and for beating eggs, and for other like purposes.

PROVISIONAL PATENTS.

DRUGS, CHEMICALS, ETC.

1646 Smart, J. C., and Aitcheson, A., Scarborough, improvements in the manufacture of charcoal.

1772 Cobley, T., Hesse, improvements in the manufacture of metallic and earthy silicates or silicious compounds of the same, from the metallic and earthy bases, or their salts and soluble alkaline, silicates, the formation of alkaline acetates or caustic alkalies, and application of the same.

1819 Laing, R., and Cossins, G. H., Ince, an improved mode of obtaining nitrous acid gas for making sulphuric acid.

1892 Guffroy, C. C. J., France, improvements in preparing medicinal substances and compounds from the livers of cod and other salt water fish.

MISCELLANEOUS.

1666 Clark, W., Chancery-lane, improvements in the distillation of solid and liquid combustible matters.

1671 Johnson, J. H., Lincoln's-inn-fields, improvements in apparatus for manufacturing and bottling aerated liquids.

1753 Wilkinson, W., Bayswater, improvements in manufacturing and ornamenting brushes, parts of which are applicable to ornamenting baskets and articles of furniture, and to protecting silver on glass.

1813 Jacques, J. A., and Fanshawe, J. A., Tottenham, an improved apparatus for a mode of stopping, plugging, or closing inkstands, bottles, and other vessels of capacity.

1815 Walker, R., Eccleston, an improved apparatus for stopping and packing bottles.

1816 Gallafent, D., Stepney, certain improvements in refrigerators for cooling liquids.

1856 Gedge, W. E., Wellington-street, improvements in the preparation and clarification of the saccharine matters obtained from beet-root, sugar-cane, Indian millet, and other saccharifferous vegetables or plants.

1934 Prince, A., Charing-cross, improvements in palate and tooth-plates for dental purposes.

1940 Fitch, S. S., Upper Seymour-street, an improved chest expander.

1955 Damoiseau, A. A. R., Paris, improvements in apparatus for drawing blood or other fluids from the human or animal body.

1978 Le Paige, L., Belgium, improvements in treating fatty and oily matters to deprive them of their smell.

2013 Binks, C., Grays-inn, improved methods of and apparatus for treating linseed and other oils and fats.